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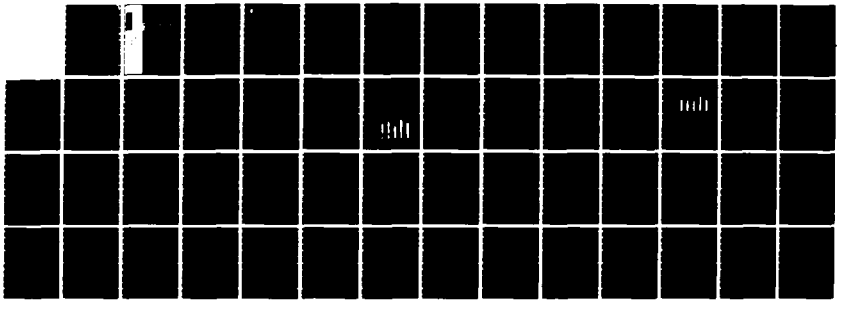

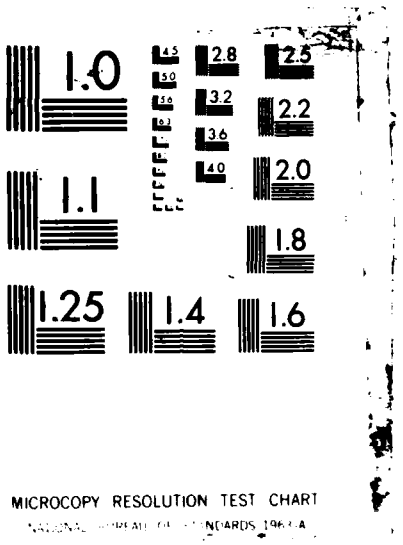

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THE IMPACT OF CONTRACTING INITIATIVES ON LEAD TIMES

Operations Research and Economic Analysis Office

NOVEMBER 1986

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DLA-LO

FOREWORD

The Defense Logistics Agency (DLA) Competition Advocate requested DLA's Operations Research and Economic Analysis Office, DLA-LO, to investigate what effect recent legislative and policy changes in the procurement process have had on DLA's administrative (ALT) and production (PLT) lead times. This report documents and summarizes the efforts and conclusions reached in the study by DLA's Operations Research and Economic Analysis Management Support Office, DLA-LO(DORO).

While ALT was found to have increased at a rate of approximately 15 days per year since 1983, PLT was found to be relatively stable or decreasing. ALT for competitively awarded contracts was found to be less, overall, than ALT of sole source contracts and PLT of competitively awarded contracts was found to be significantly less than PLT of sole source contracts. Also, items which were broken-out from sole source to competition experienced reduced ALT and PLT subsequent to the break-out.

Recommendations include: 1) the continuation of efforts to break-out items from sole source to competition 2) a study focusing on the individual components of the procurement process to determine what is causing the increases in ALT 3) an investigation into the validity of the basis of contract delivery date establishment 4) an update of this study using fiscal year 1986 data as it becomes available and 5) the establishment of SAMMS data elements to better identify small purchase sole source contracts and break-outs to original equipment manufacturers.

ROGER C. ROY
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EXECUTIVE SUMMARY

INTRODUCTION

In response to the increasingly recognized practice of certain commercial vendors charging excessive prices to government procurement agencies for materials, the Defense Logistics Agency (DLA), the Department of Defense (DOD) and the United States Congress have implemented a number of initiatives directed at reducing or eliminating such practices. One major effort has been to cultivate new sources of products to reduce prices by means of a more competitive marketplace. The Competition Advocacy Program (COMPAD) has been effectively achieving this goal and realizing significantly reduced prices. These savings have not been won without cost, and a question has been raised whether one of the costs has been increased administrative and production lead times. The DLA Competition Advocate tasked DLA's Operations Research and Economic Analysis Office (DLA-LO) to conduct an analysis addressing this question.

The scope of the study was lead times experienced by the four DLA hardware centers; Defense General Supply Center (DGSC), Defense Electronic Supply Center (DESC), Defense Industrial Supply Center (DISC) and Defense Construction Supply Center (DCSC). The period of the study was fiscal years 1983 through 1985.

CONCLUSIONS

Study findings indicated that administrative lead time (ALT) has been increasing at the rate of approximately 15 days per year between October 1982 and September 1985. An attempt to correlate specific ALT increases with individual contracting initiatives was not successful. It was determined that many other factors in concert with the contracting initiatives have combined to elicit some of the observed increases in ALT. Except for a small population of items stocked in DLA depots, Production Lead Time (PLT) was found to have been stable or decreasing.

The lead times (both ALT and PLT) for large purchases of items procured on a sole source basis were compared to lead times for items competitively procured. It was determined that sole source lead times, overall, were significantly longer. It should be noted that these differences may be at least partially due to inherent characteristics of the items and not only the method of procurement. The effect of breaking-out a sole source item to competition was also examined. It was found that after the item was broken-out to competition both ALT and PLT decreased approximately 30 days, on average, across the four hardware centers.

The difference in PLT between stock buys and buys for direct delivery to customers was examined. It was determined that PLT of stock buys was significantly longer. One possible source of the difference in PLT for stock buys and PLT for direct deliveries may be the method DLA uses to establish contract delivery dates (CDD). It was also found that DLA PLTs have been two to four times higher than PLTs for comparable items procured in the private sector.

RECOMMENDATIONS

Because lead times were shorter for competitively awarded contracts, it is recommended that efforts to break-out items from sole sources continue.

The overall increase in ALT prompts a recommendation that specific components of the procurement process be examined to determine the factors driving the increases so that alternative methods of reducing ALT may be considered.

The CDDs for stock buys were based on automatically computed PLTs while the CDDs for direct deliveries were established by the contracting officer. The fact that PLTs for stock buys were significantly longer could indicate that the automatically established CDDs may have given the contractor more time to complete a production run than was actually required. This, in addition to shorter PLTs experienced in the commercial sector, leads to the recommendation that the automatically calculated CDDs be examined for validity and reliability.

MANAGEMENT SIGNIFICANCE

If the present method of establishing CDDs results in longer PLTs than necessary, and if a change in this method would eventually result in reduced PLTs, then substantial savings could be realized from the resulting reductions in safety levels, on-hand inventories, and storage requirements. Also, if CDDs reflected a more accurate PLT, Item Managers could more effectively manage inventories.

I. INTRODUCTION

A. Background. In recent years, the Defense Logistics Agency (DLA), The Department of Defense (DOD) and the United States Congress have taken several definitive steps to reduce and eliminate the instances of commercial vendors charging excessive prices for DLA-procured materiel. One major thrust in this direction has been the Competition Advocacy Program (COMPAD). COMPAD has successfully increased the number of contractors bidding for DLA contracts and has achieved significant reductions in prices for materials procured. Other contracting initiatives implemented by DLA are listed in Appendix A on page A-1.

B. Problem Statement. While the resulting reductions in prices charged by vendors in a competitive environment have been well documented, the cost to DLA of achieving these reductions has been questioned. The problem addressed in this study was whether DLA has experienced increased costs in the form of longer administrative or production lead times as a result of increased emphasis on competition and other contracting initiatives.

C. Objectives. The objective of this study was to examine administrative and production lead times to determine whether DLA has, in fact, experienced increased lead times in response to the recently implemented contracting initiatives.

D. Scope. The study focused on the procurement data available from the four DLA hardware centers; Defense General Supply Center (DGSC), Defense Electronic Supply Center (DESC), Defense Industrial Supply Center (DISC) and Defense Construction Supply Center (DCSC). The time frame of the data examined was January 1982 through September 1985. The bulk of the data available, over 3.8 million contracts for stocked and non-stocked, National Stock Number and part-numbered items, was for fiscal years 1984 and 1985.

II. METHODOLOGY

A. Literature Search. A customized bibliography of existing literature on lead time studies was obtained from the Defense Logistics Studies Information Exchange. This bibliography was reviewed and it was determined that the study of lead times at DLA had not previously been undertaken. However, the literature search did provide valuable background information for the study.

B. Data Sources

1. SAMMS

a. The study was initiated by reviewing Standardized Automated Material Management System (SAMMS) data files, and a data source was chosen from which lead time measures could be computed.

b. SAMMS maintains data relevant to items procured and managed by DLA. Data is collected from the point at which the need for an item is discerned until the item is received by the requisitioner and the contract is closed. In addition, historical files are maintained with limited data regarding completed contracts.

c. Two components of the SAMMS information medium are the Active Contract File (ACF) and the Contract History File (CHF). These two data files provided the framework on which the study was based. These files were obtained from each center in October 1984, April 1985 and October 1985.

(1) The Active Contract File (ACF) contains detailed records of a given contract and includes dates which allow the measurement of administrative lead times (ALT), and in some cases, production lead time (PLT). As defined in this study, ALT was the number of days between the Recommended Buy Date, which is the date a request for an item is noted, and the Award Date, the date the contract is officially awarded. A file layout of the ACF is provided in Appendix B starting on page B-1. PLT was defined in this study to be the number of days between the Award Date and the Ship Date. The Ship Date is the date the first contracted item leaves the manufacturer en route to the warehouse or to the customer who requisitioned the item.

(2) The Contract History File (CHF) contains less detailed procurement information but does contain dates which permit measurement of PLT. The CHF provided the bulk of PLT measurements. A file layout of the CHF is provided in Appendix B starting on page B-8.

2. DLA Contracting Directorate, Systems Branch (DLA-PPS). Due to a limitation of the database (discussed in the Limitations Section, paragraph II.C.) some Administrative Lead Time Measures were taken from data provided by DLA-PPS. This data included Procurement Administrative Lead Time (PALT) information which was used in lieu of ALT data where appropriate in the analysis. PALT was defined as ALT less the time that the procurement action spent in supply center directorates other than the Contracting Directorate. This difference between ALT and PALT is also known as the "suspense time".

3. Commercial Production Lead Time Indicators. These indicators were extracted from Purchasing magazine to determine, by comparison to DLA PLTs, if factors other than contracting initiatives were operating to cause changes in PLT. The commercial PLTs obtained by the magazine were telephone quotes by manufacturers to requests for lead times to deliver products. There were 99 commodity groups in which close similarity could be established between items procured by DLA and items listed in Purchasing.

4. DISC Production Lead Times. Independent measures of Production Lead Times (PLT) were available at DISC and were obtained to validate study results. Appendix C on page C-1 shows that the DISC measures of PLT generally correlated with study measures. The reason the study PLT

was consistently shorter was that the study ended PLT at the Ship Date and the DISC data ended PLT at Receipt Date. The reason for the differences in PLT parallels the discussion in the Limitation Section in paragraph II.C.4.

5. DCSC Study on Manhours to Award Contracts. A study completed in 1985 by DCSC-LO titled "An Assessment of DCSC Procurement: FY 85 Performance and FY 86 Forecast" focused on the number of manhours needed to award a contract at DCSC. This study determined that a large number of variables were acting to influence PALT at DCSC. These same variables, listed in Appendix D on page D-1, influence PALT in all DLA centers.

C. Data Limitations

1. One problem which surfaced early in the study involved the maintenance of the SAMMS data files. The SAMMS data base routinely purges certain procurement information as the contract is completed and its contract information is moved from the Active Contract File to the Contract History File. This problem was discovered when study measurements of ALT were validated against data provided by DLA's Contracting Directorate and were found to be consistently longer. This difference was examined and determined to be caused by loss of the short lead time contracts which were initiated, awarded and closed in less than six months, the periodicity at which the data were drawn from the SAMMS files.

a. The Active Contract File (ACF) contains records which are 400 bytes in length and contain key procurement information, including the data needed to measure ALT. When the contract is closed (the materials have been received and payment made to the contractor) the contract record is reduced to 110 bytes and migrates to the Contract History File. When this occurs, many data elements critical to this study were lost. Appendix B displays the difference between the two files.

b. ALT measurements were affected by the time intervals between the data draws from the centers. If a contract was initiated, awarded and closed between the points at which the data were drawn, the contract record migrated from the ACF to the CHF and data elements used to measure ALT were lost. The loss of the short ALT caused the study measures to be artificially high, except in the months where the data were drawn from the centers and the required data were on the ACF. Small Purchase ALTs, mainly, were affected by this loss of data elements. Consequently, in some cases the PALT data provided by DLA-PPS instead of the ALT data in the study data base were considered to be a better indicator of administrative lead time trends (see Figures 1, 2 and 3).

c. The Recommended Buy Date (RBD) was among those data deleted making it impossible to capture ALT from the Contract History File. If the RBD had been retained in the Contract History File, approximately three million more measures of ALT would have been available for examination. Also, stratification of the contracts by Price Competition Code (Table 1), Fund Classification Code (Appendix E on page E-1), Supply Status Code (Appendix E on page E-1), and measurement of Suspense Time

using Purchase Request Return and Purchase Request Reinstate Date were similarly limited in number. As each stratification was made, the sub-populations became progressively smaller. Where insignificant numbers of data were available, measurements were discarded from the study.

Table 1

PRICE COMPETITION CODES

Code	Definition
-	Advertised (competition assumed)
0	PCC unascertainable due to missing Active Contract File Record
1	Negotiated under $10K USC 2304 (a) (3) with price competition
2	Negotiated under $10K USC 2304 (a) (6) using small purchase procedures with price competition
3	Negotiated awards $25K or less with price competition other than 1 and 2 above
4	Negotiated awards $25K or less without price competition (SAMMS generates PCC 4 for Phase I BPA awards)
5	Awards $25K to $100K with price competition
6	Awards $25K to $100K without price competition
7	Awards over $100K with price competition
8	Awards over $100K without price competition

2. An additional concern was the small number of data points available for items infrequently procured during the relatively short period examined in the study. For example, if an item was purchased once each year, only three contracts were awarded during the period of the study and only three measures were taken. Ideally, the trend of lead times for a single item would be examined over time to see if individual lead times were responding to contracting initiatives. However, the relatively small number of contracts for each item, added to the fact that every contract varied in quantity and dollar value, made the trends of lead times for individual items erratic. Consequently, lead time trends were examined for groups of NSNs, stratified by such characteristics as large versus small purchase contracts, and competitive versus sole source awards.

3. Statistical comparisons and trend analyses can only be made between two groups which share some qualities. The greater the number of shared qualities, the more significant the compared differences in the groups become. In a statistical comparison and trend analysis, these shared qualities are "held constant", or ignored, so that the differences between the groups may be considered. This requirement limited the study in an important aspect.

a. When a comparison was made between lead times of a contract awarded under sole source conditions versus lead times of a contract awarded under competitive conditions, it was understood that these groups may have few shared qualities. That is, a "sole source" item may have been inherently different from a "competitive" item. Sole source items, by their nature, may have been more complex or sophisticated which might result in longer times to award (ALT) and longer times to manufacture (PLT). It was, therefore, necessary to use caution in selecting which subgroups of lead times would be compared. The following paragraph explains the manner in which this limited the study.

b. Of the comparisons which were possible between lead times for sole source and competitive items, it was found that the only valid comparison of lead times were for contracts in the large purchase category, that is, over $25,000. The attempt was made to compare leadtimes for small purchases, competitively awarded versus sole source contracts, however no valid indicator existed to distinguish between these two groups. Also, the study was limited to large purchase due to the bias described in paragraph II.C.1. This was especially limiting in that the bulk of the data was for small purchases.

4. Appendix D on page D-1 contains a list of variables influencing ALT which was generated in the previously described DCSC study of the number of manhours to award a contract. The number of variables, the varying degree to which individual variables affected each supply center and the time of their influence precluded the possibility of correlating specific amounts of ALT increase with a specific contracting initiative. As pointed out in the analysis portion of this paper, the increases in ALT were of a gradual, cumulative nature.

D. Study Data Base Established. The original SAMMS data tape record formats were examined and data elements relevant to this study were selected. The ACF was then merged with the CHF to produce the basic study data base. Contract Line Item Numbers (CLINs) were merged into one record per contract. A computer program was developed which measured ALT as the time in days between the Recommended Buy Date and the contract Award Date. PLT was measured as the time in days between the contract Award date and the date that the first contract shipment was made, the Ship Date.

E. Large and Small Purchases Contracts Identified. Large and small purchase contracts were delineated by the ninth character in the contract number. If the character was a "C", the contract was considered a large purchase. Any other character indicated a small purchase.

F. Validation of Lead Time Measures

1. ALT measures were validated against data provided by the DLA Contracting Directorate. Appendix F on page F-1 shows that there was a close correlation between the DLA data and the measures obtained in the study for large purchase contracts. However, Appendix F on page F-2 shows disagreement in small purchase data. This difference was investigated and found to be a function of the SAMMS procedures for file maintenance as discussed in paragraph II.C.1. Appendix F on page F-2 shows the number of small purchase contracts captured in the study data base. The

low points of the valleys coincide with the dates the data were drawn from SAMMS and proved that the shorter ALT records were purged from the Active Contract File, which biased the measures upward.

2. PLT measures were validated against data provided by DISC. Appendix C on page C-1 shows DISC measures of PLT compared to the study's data base measurement of PLT. The DISC measures were longer due to the difference in definition of PLT: DISC used Receipt Date to end PLT and this study used Ship Date. Also, the DISC supplied measurements of PLT included only PLT for Stock Buys and this study included the shorter PLTs of Direct Vendor Deliveries.

G. Competitive and Sole Source Contracts Identified

1. The key to delineating sole source versus competitively awarded contracts was the Price Competition Code (PCC) shown in Table 1. If the PCC was 6 or 8, that contract was considered to have been awarded under sole source conditions. If the PCC was 1, 3, 5 or 7, the contract was considered to have been awarded under competitive conditions. A PCC of 2 was not found in significant numbers in the data base to be of use.

2. It was not possible to use PCC 4 to make a comparison due to the fact that it contained both competitive and sole source contracts.

3. Appendix G on page G-1 presents ALT and PLT for the PCCs which were identifiable for each center. It also indicates the number of cases for each PCC.

H. Items Broken-out to Competition Identified

1. The data base was sorted on National Stock Numbers and contract numbers so that all the buys for a specific NSN could be examined. To determine if an NSN experienced a break-out from sole source to competition, the PCC and Federal Supply Classification for Manufacturers (FSCM) were inspected for each NSN.

2. If, over time, the data showed that the PCCs of contracts for the NSN were consistently sole source, and then, changed to show that the contracts were awarded competitively, that NSN was defined as having been broken-out to competition.

3. Similarly, if contracts for an NSN were consistently awarded to the same contractor as reflected by the FSCM, and then awarded to one or more different contractors, as reflected by a change in the FSCM, that NSN was defined as having been broken-out to competition. The number of break-outs identified by a change in the FSCM was insignificant in proportion to all break-outs identified.

4. In rare instances, the FSCM was seen to be consistently of one contractor and then changed to be consistently with one other contractor. This suggested the possibility that the award went from a sole source vendor to the original equipment manufacturer (OEM). Because there was no key indicator to identify that the break-out was to the OEM, it was not possible to substantiate that this had in fact occurred.

I. Stock Buys Compared to Direct Vendor Deliveries

1. Appendix E on page E-1 lists Supply Status Codes (SSC). These codes are one means of distinguishing Stock Buys from Direct Vendor Deliveries (direct shipments). An SSC of 1 denotes a Stock Buy and an SSC of 2 or 3 denotes Direct Vendor Delivery (DVD).

2. Appendix E also lists Fund Classification Codes (FCC). These codes provided a second means of distinguishing Stock Buys from DVDs. If the procurement records contained an FCC of A, they were considered to have been Stock Buys, and PLTs for these contracts were compared to PLTs for contracts which contained an FCC of E, which were considered to have been Direct Vendor Deliveries.

J. Controls Established for the "Economic Cycle"

1. The possibility of exogenous factors affecting lead times, such as the Business Cycle or whether the economy was in a recessive or growth condition was addressed. If increases or decreases in PLT were, in reality, attributable to factors other than contracting initiatives the effects would have to be quantified and controlled in examining DLA PLT.

2. Commercial production lead time indicators were extracted from Purchasing magazine. This periodical contains quotes for production lead times from commercial vendors for specific items such as electrical motors or bearings. These lead times experienced in the private sector were compared to DLA production lead times in 99 classes where close similarity of items could be established.

K. Suspense Time Measured

1. Suspense Time is the time a Purchase Request spends in the Technical Operations or Supply Directorates. The contracting officer may route the contract to one of these divisions for clarification, verification or technical alteration. This time is not charged as Procurement Administrative Lead Times (PALT) and is sometimes referred to as Pre-Procurement Administrative Lead Time (PPALT).

2. Suspense Time was examined to determine if contracts had experienced an increasing amount of time in suspense as a result of contracting initiatives.

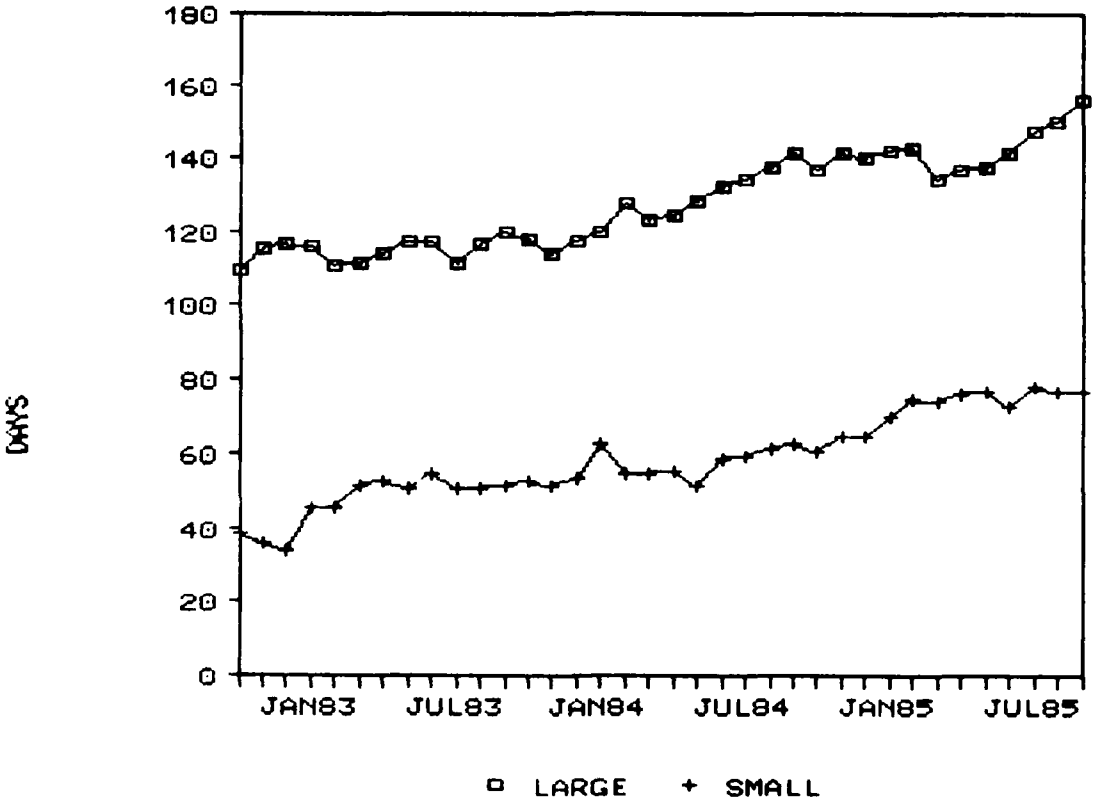
3. Suspense Time was measured as the number of days from the Purchase Request Return Date (i.e. the start of suspense) to the Reinstate Date, when the purchase request returned to procurement.

III. ANALYSIS

A. Administrative Lead Time (ALT)

1. Overall Procurement Administrative Lead Time (PALT). Figure 1 indicates that PALT has gradually been increasing DLA-wide in both the large and small purchase categories. The lack of clearly defined "peaks" or surges in PALT made it impossible to associate any increases in PALT with specific contracting initiatives. The number of variables operating to influence PALT (Appendix E on page E-1) were seen to obscure specific instances of ALT increase.

Figure 1. PALT: ALL CENTERS



2. PALT for Each Center. The PALT measures were compared between centers with the intention of pinpointing times at which PALT increased at all centers in response to contracting initiatives. Figure 2 shows there was no coinciding increase among the centers in large purchase PALT. Figure 3 shows the same is true for the small purchase PALT.

Figure 2. PALT: EACH CENTER, LARGE PURCHASE

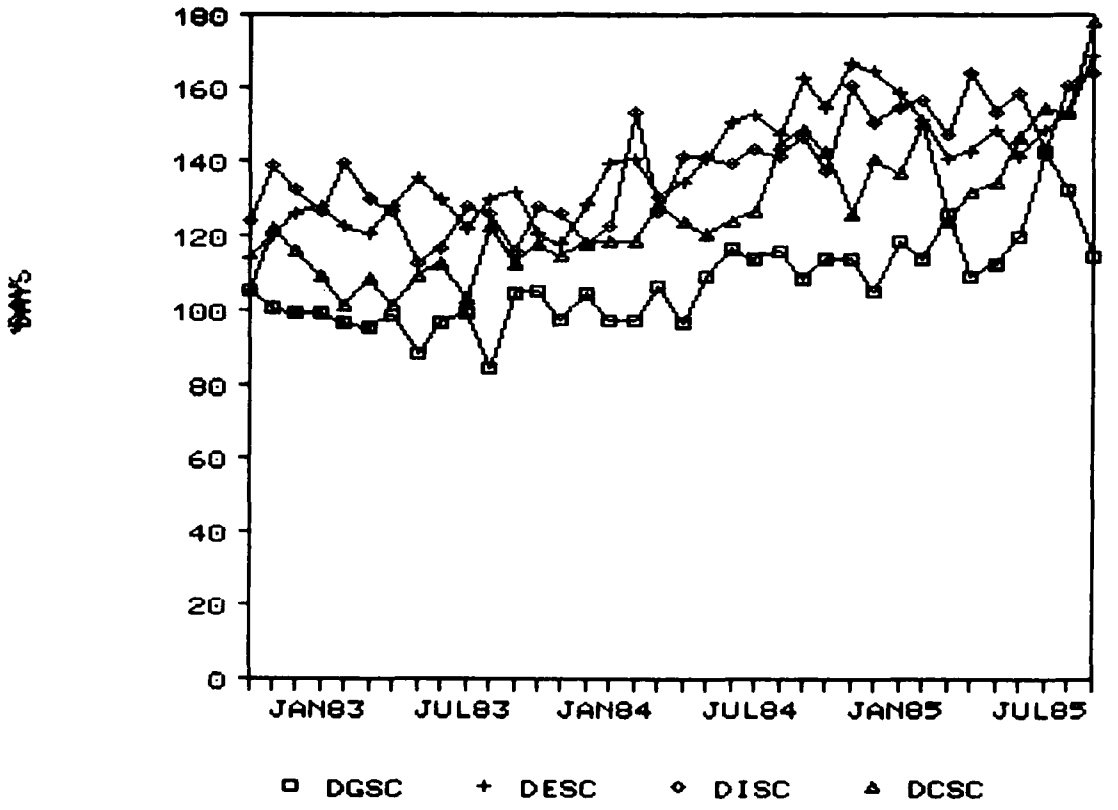
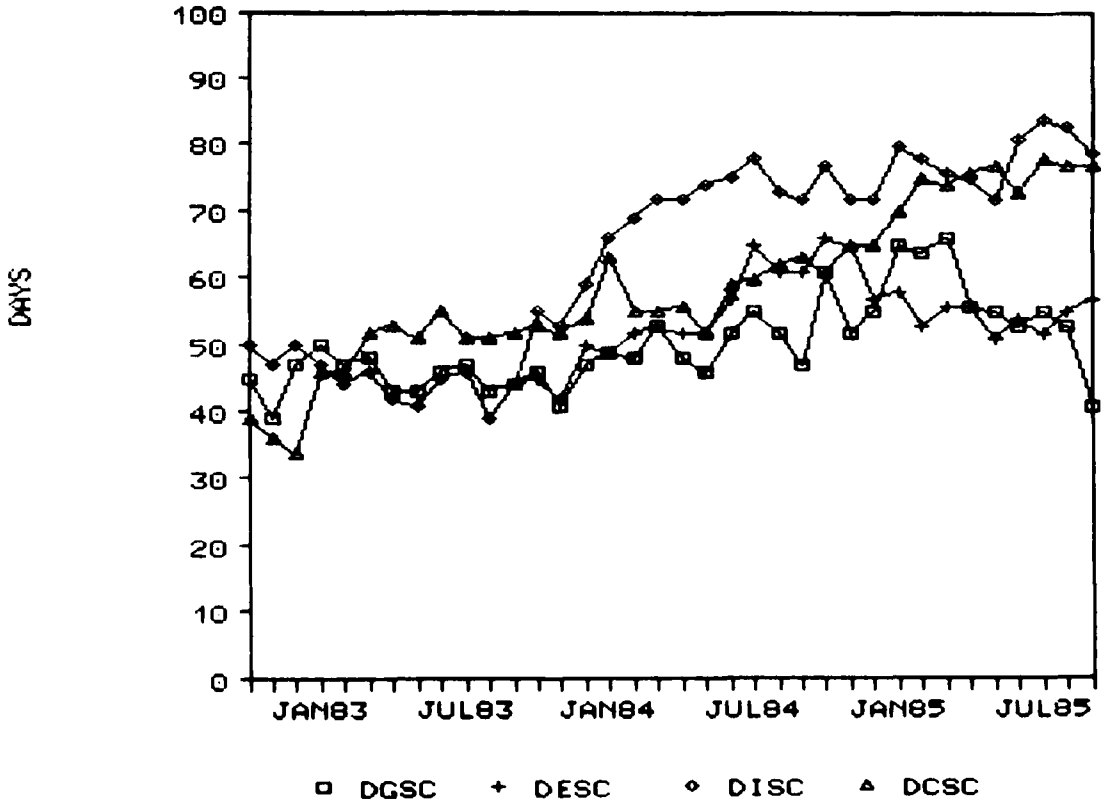


Figure 3. PALT: EACH CENTER, SMALL PURCHASE



3. Sole Source Versus Competitive Awards

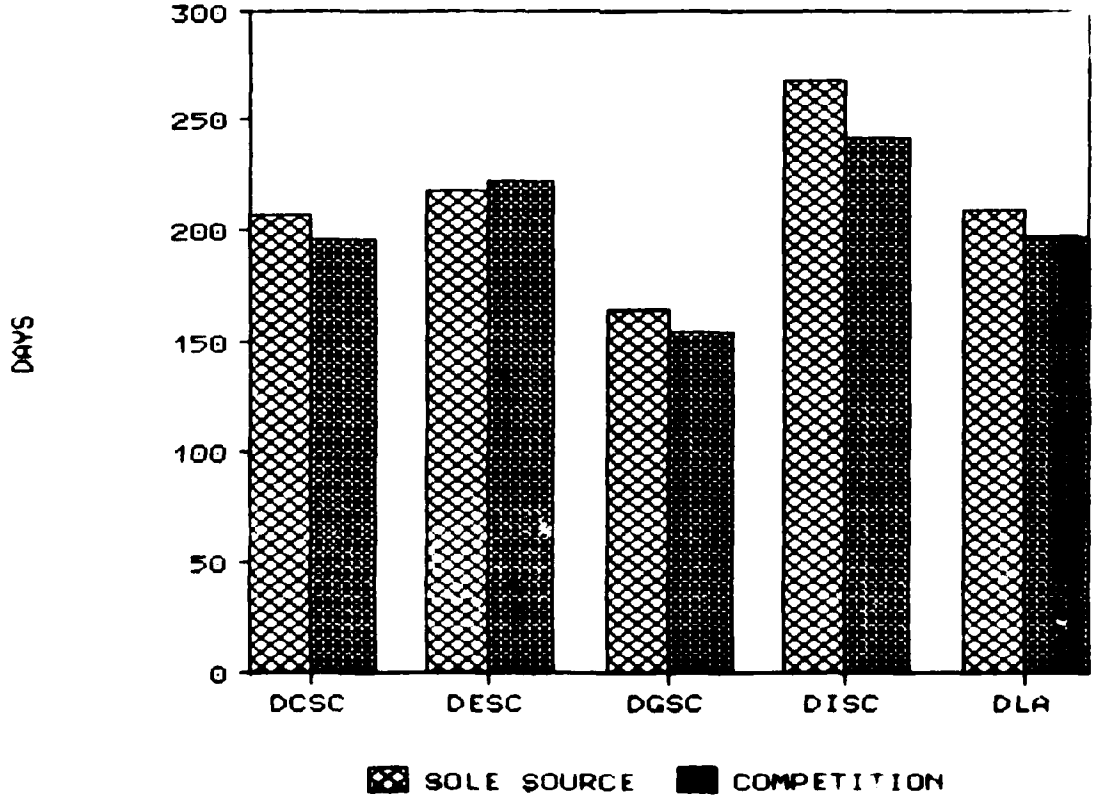
a. Figure 4 shifts attention from PALT to ALT as defined in the study and gives a comparison of ALT for the class of contracts determined to have been awarded under sole source conditions to the ALT of contracts awarded under competitive conditions. It was originally anticipated that competitive contracts would take longer to award as the result of many factors including the requirement to synopsize requests for bids in the Commerce Business Daily. This was not the case, however, as the ALT for sole source was statistically significantly longer for the four centers overall. It was noted that at DESC the ALT for competitive contracts appeared to be longer. This may have been due to the nature of materials procured at DESC or simply a reflection of the statistical margin of error. The overall comparison, however, remains valid.

b. Reasons for the difference may include:

(1) Sole source justification requires additional efforts on the part of the Contracting Officer.

(2) The auditing requirements for sole source contracts add significant ALT to the contracting process. Each sole sourced contract over $100,000 must be audited by the Defense Contract Audit Agency. This adds 30 to 90 days of ALT to the contracting process.

Figure 4. ALT: SOLE SOURCE VERSUS COMPETITION



4. ALT Before and After Break-Out

a. In those cases where a break-out of an NSN from sole source to competitive sources was identifiable, ALT before the break-out was compared to ALT after the break-out. Figure 5 shows that ALT was significantly reduced following the break-out to competition.

b. The first ALT following the break-out may be artificially high as the contracting office adjusts from awarding the contract under sole source conditions to awarding it competitively. If this first post-break-out ALT was excluded from the data, as in Figure 6, the difference between sole source ALT and competitive ALT was more apparent.

c. Reasons for these differences may include:

(1) Elimination of the need to justify sole source procurement.

(2) Release from the requirement to have the contract audited by the Defense Contract Audit Agency.

Figure 5. ALT: BEFORE AND AFTER BREAK-OUT TO COMPETITION

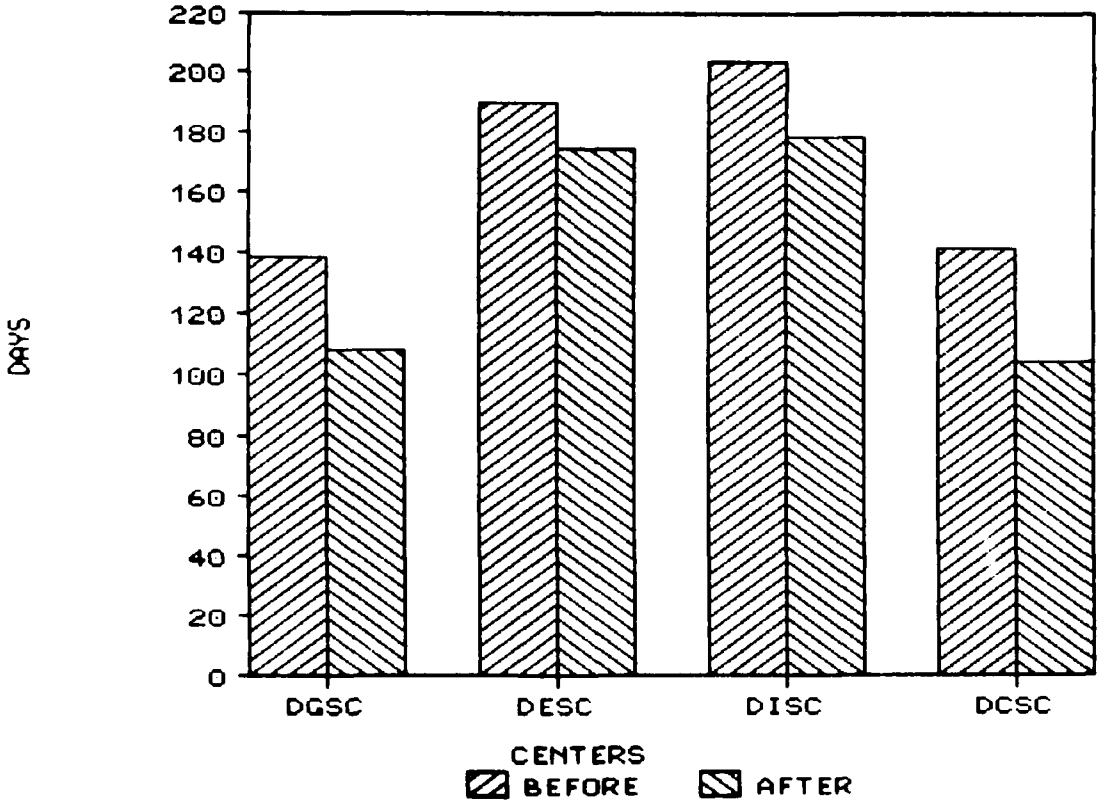
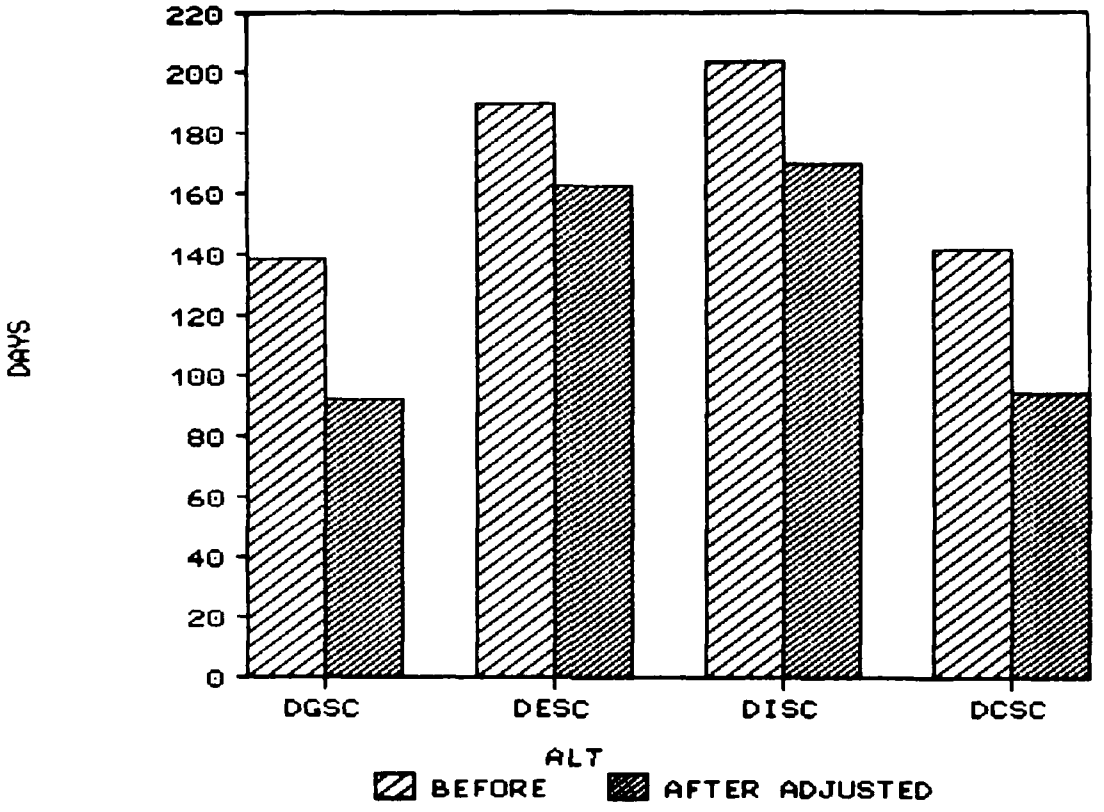


Figure 6. ALT: BEFORE AND AFTER BREAK-OUT TO COMPETITION, ADJUSTED

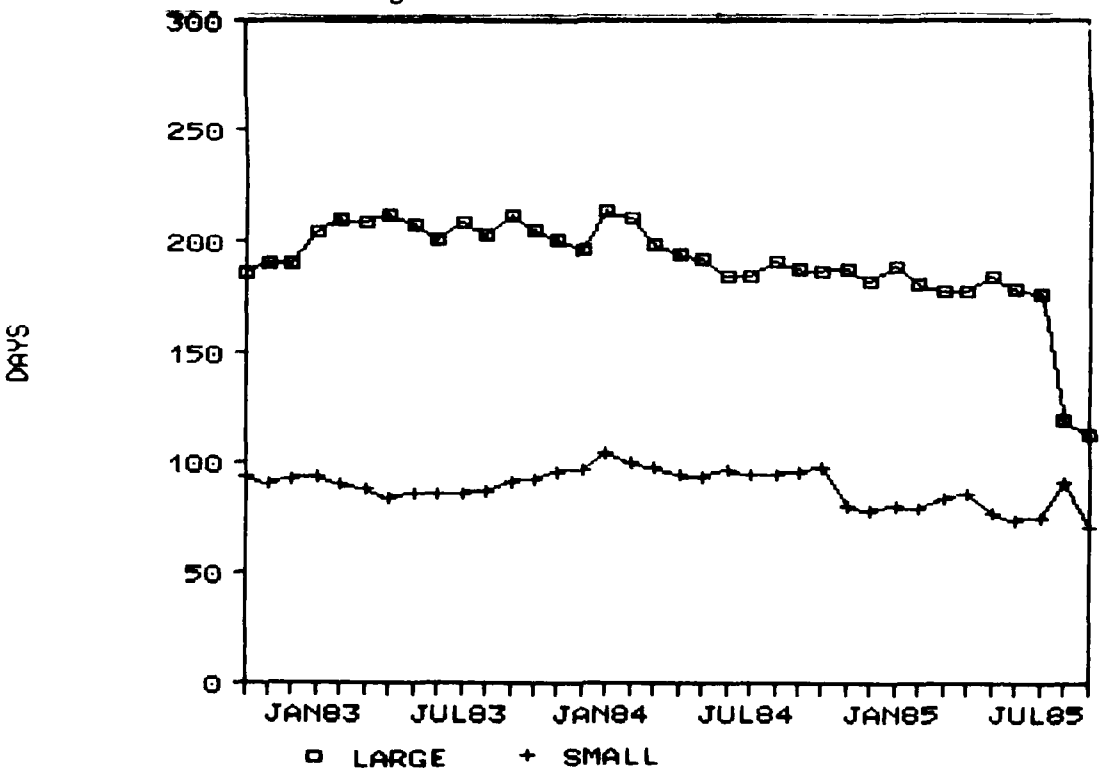


5. Suspense Time. Appendix H on page H-1 provides representative Suspense Times for DGSC and DCSC as components of ALT. These indicate that Suspense Time has not increased in response to contracting initiatives and because it was not a major factor in overall ALT, it was not investigated further.

B. Production Lead Time (PLT)

1. Overall PLT. Figure 7 shows overall average PLT for the four hardware centers over time. These data include PLT for Stock Buys, Direct Vendor Deliveries and part numbered items. It appeared that PLT has remained relatively stable and may be experiencing a decline. The accentuated decline for the Large Purchase PLT in the months of August and September 1985 reflects the fact that Ship Dates were only available for the shorter PLTs and so biased the measures downward. The items procured which had longer lead times were not shipped until after September 1985. A future study including FY 86 data would provide a more accurate estimate of the PLT for these contracts awarded late in FY 85.

Figure 7. PLT: ALL CENTERS



2. PLT for Each Center. Figures 8 and 9 break the overall PLT shown in Figure 7 into PLT for Large and Small Purchases for each hardware center. Here the differences between the centers are evident and it can be seen that there was no point at which the centers uniformly responded to contracting initiatives with a concerted increase. It was not possible to associate a specific change of PLT with any specific contracting initiative.

3. Sole Source Versus Competitive Awards

a. Figure 10 shows a comparison of PLT for large purchases in each class of contracts: sole source versus competition. The PLT for sole source contracts was significantly longer than the PLT for competitively awarded contracts.

b. Appendix I on page I-1 shows a time series comparison between sole source and competitive PLT for contracts over $25,000. Except for the period prior to 1984 in which the data were sparse and the measures erratic, sole source PLT was consistently longer than competitive PLT.

c. The reasons for these differences probably include the increased responsiveness of a contractor in a competitive environment as well as the inherent differences in the products procured as discussed previously.

Figure 8. PLT: EACH CENTER, LARGE PURCHASE

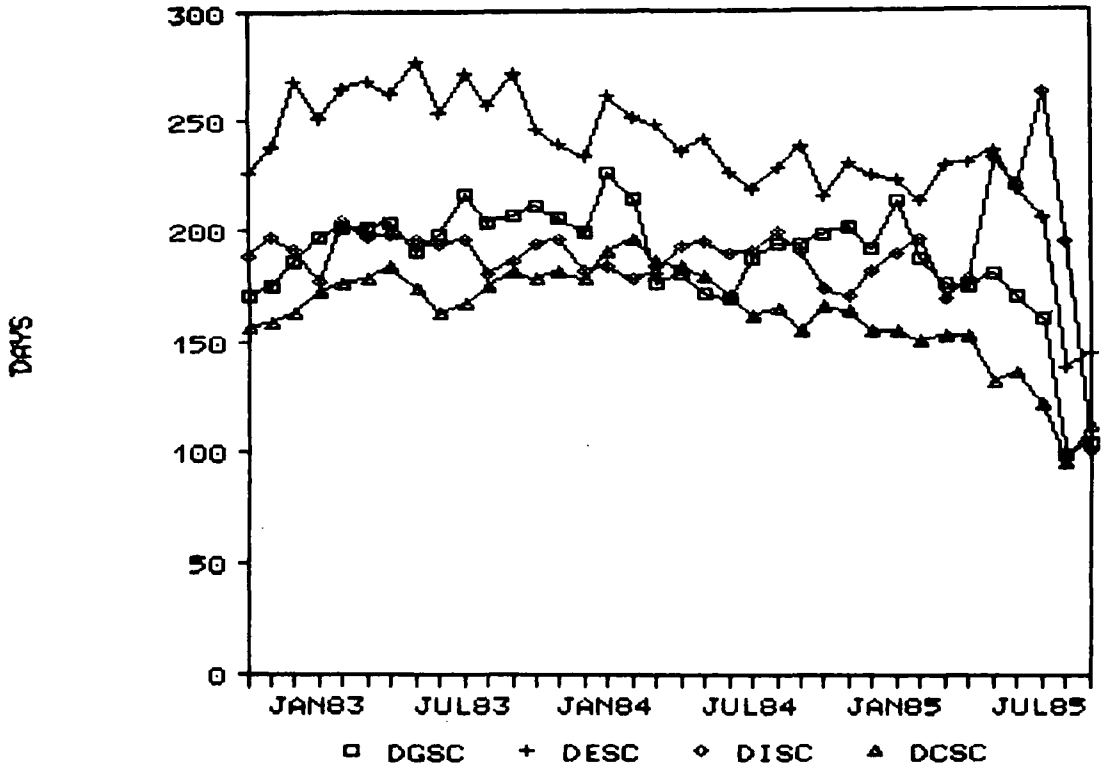


Figure 9. PLT: EACH CENTER, SMALL PURCHASE

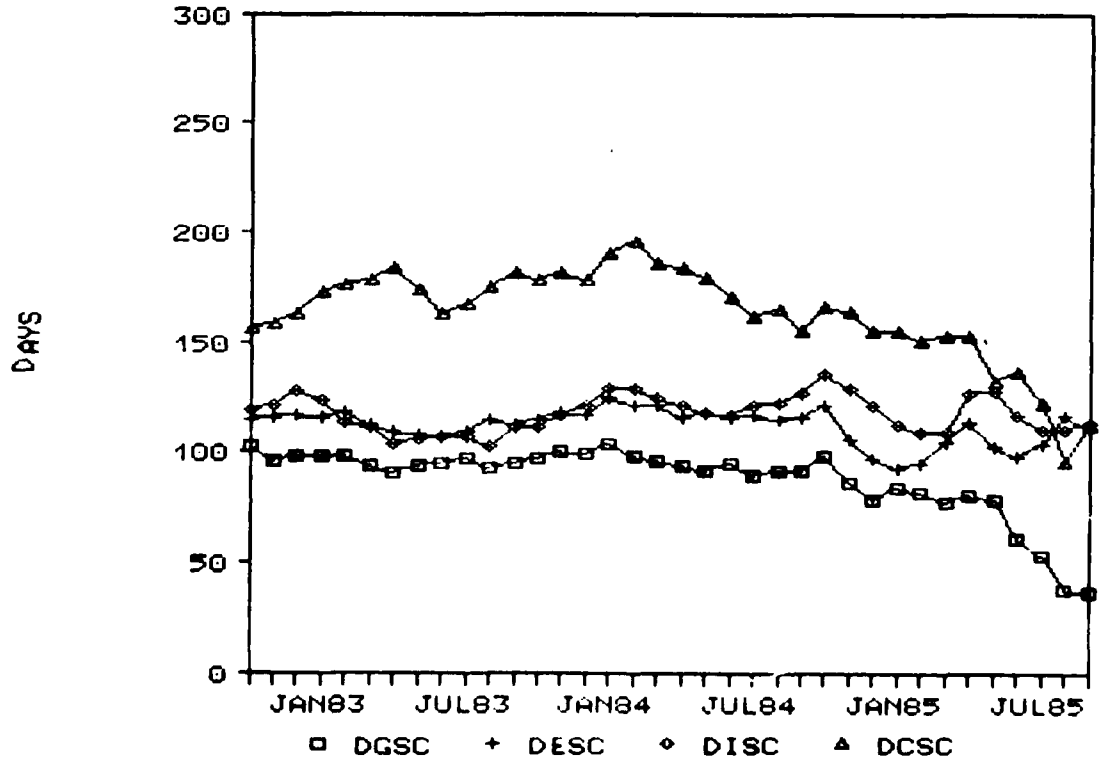
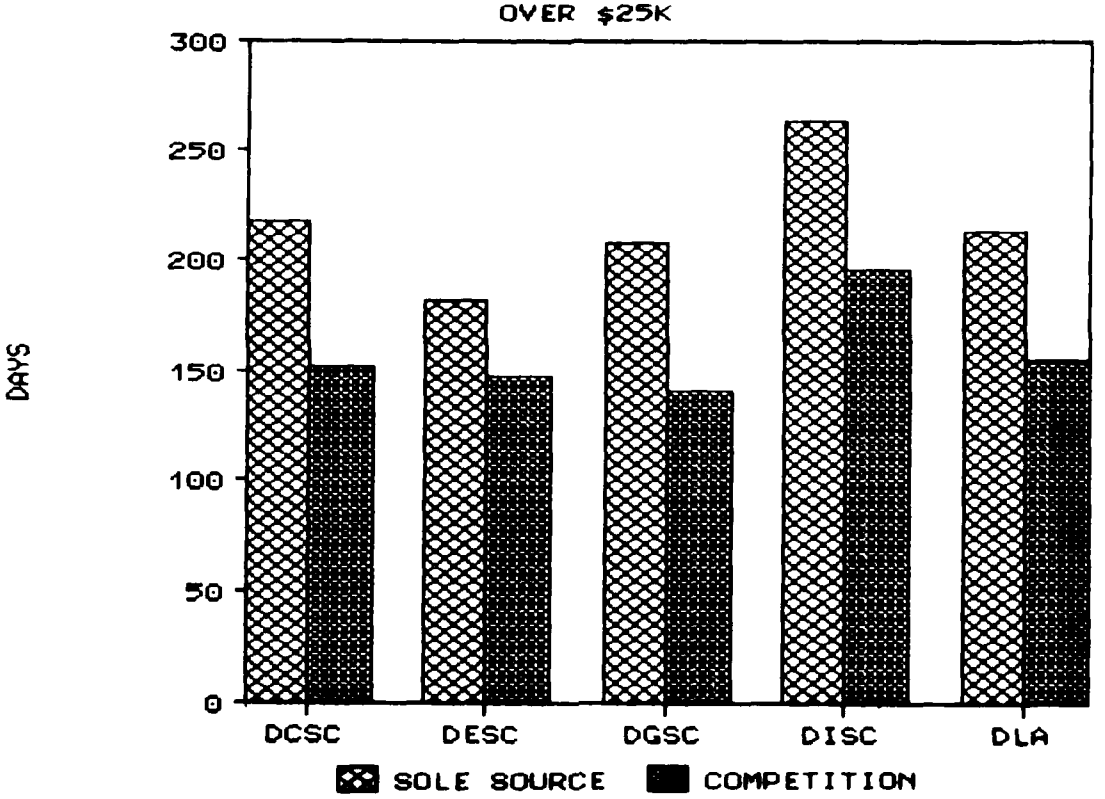


Figure 10. PLT: SOLE SOURCE VERSUS COMPETITION OVER $25K



4. PLT Before and After Break-out

a. Figure 11 parallels the previous examination of ALT in Figure 5. Here, where the break-out of an NSN from sole source to competitive sources could be identified, the PLT before the break-out was compared to the PLT after the break-out. This shows that PLT was significantly reduced following a break-out to competition.

b. One reason for these differences may be that a vendor in a competitive environment was motivated to be more responsive in producing and delivering material.

c. The question was raised whether PLT increased following a break-out to competition as the new contractor produced the previously sole source item for the first time. Would the new contractor take longer to deliver? The first PLTs following break-outs to competition were examined, and found to be no different from subsequent PLTs.

5. PLT for Stock Buys and Direct Deliveries

a. PLT was also broken down by types of buys. PLTs of contracts for Stock Buys were identified, as were PLTs for Direct Vendor Deliveries (DVD). Figure 12 compares these two groups. The PLT for Stock Buys was significantly longer than the PLT for DVDs.

Figure 11. PLT: BEFORE AND AFTER BREAK-OUT TO COMPETITION

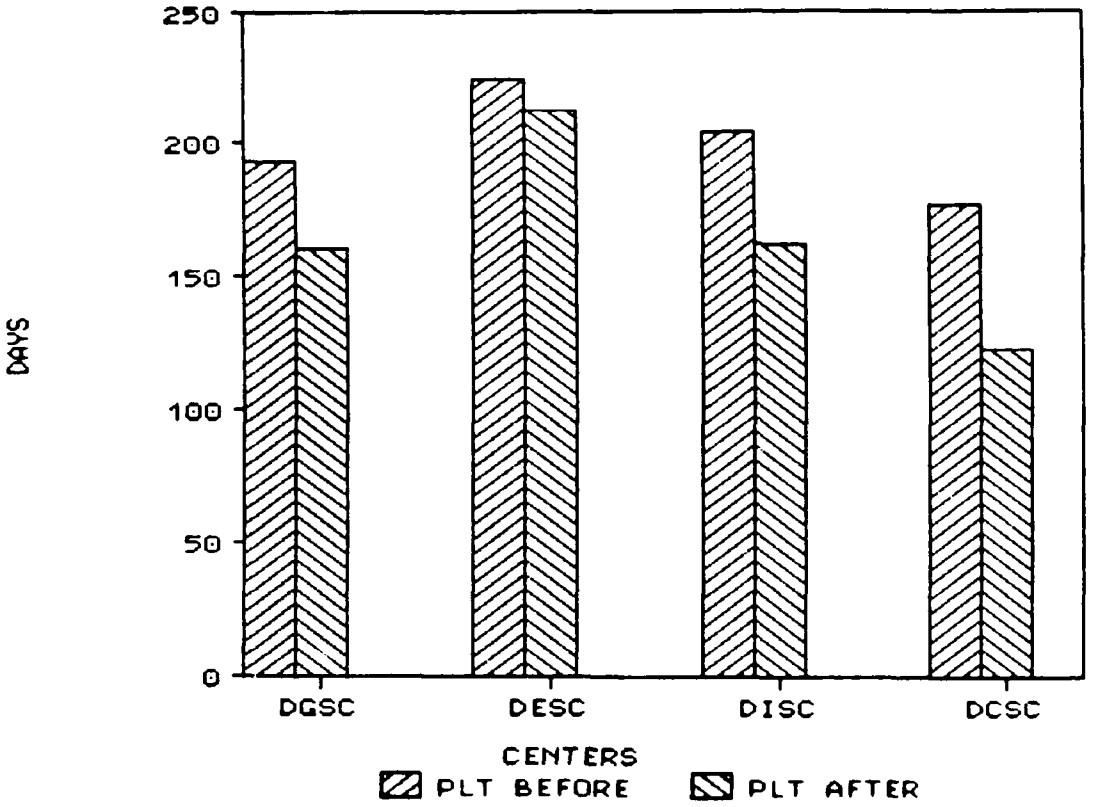
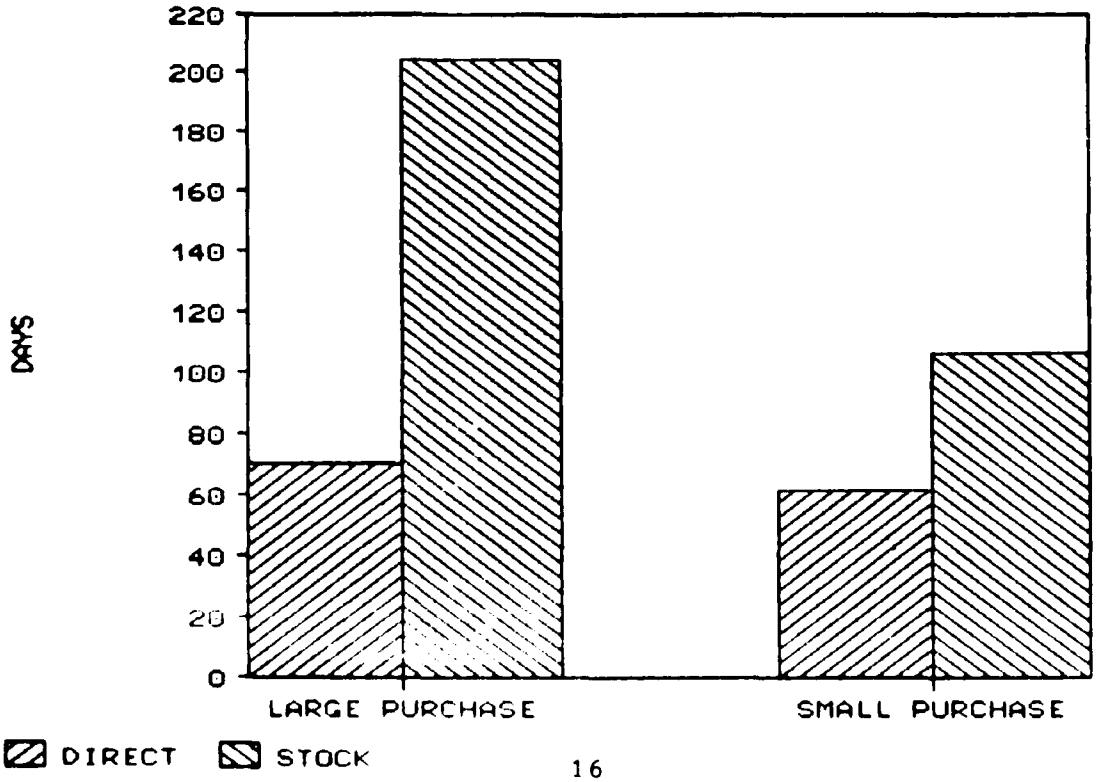


Figure 12. PLT: STOCK BUYS VERSUS DIRECT DELIVERIES



b. Reasons for these differences may include:

(1) Production quantities for Stock Buys tend to be larger, and larger production quantities may take longer to produce.

(2) The contract delivery date (CDD) for Stock Buys may allow the contractor more time to deliver than is really necessary.

(a) The CDD established by the contracting officer for Stock Buys is usually based on the PLT computed by the SAMMS. The SAMMS PLT is a weighted average of one third all prior PLT plus two thirds of the most recent PLT. Since this computation does not discriminate between the different categories of contracts such as large and small purchase or the quantities ordered, a bias may be built into the process and PLT may gradually increase. That is, it increases more when there is a large contract than it decreases for the smaller contracts. This becomes a factor in exploring means of reducing PLT if the contractors are capable of producing and shipping the requested Stock Buys some time prior to the contract delivery date, but routinely delay production and shipment until some time closer to the CDD.

(b) The CDD for direct vendor deliveries is not based on the SAMMS PLT estimate. The contracting officer estimates the PLT based on quantities, and, perhaps, prior experience. The fact that DVD PLT was much less than Stock PLT may indicate that SAMMS PLT could be leading the contracting officers to establish unnecessarily generous CDDs for Stock Buys.

(3) In the case of DVDs, the contractor has the name and address of a military customer on the contract to whom he ships the material. In the case of Stock Buys the address is simply a DLA depot. The perception that a military customer is waiting for the material may create a sense of urgency which could result in shorter PLT.

c. Appendix J on page J-1 provides additional breakdowns of PLT according to Supply Status Code (SSC) and Fund Classification Codes (FCC). With the exception of a small population of large purchase contracts which was identified using the SSC and FCC, PLT was seen to be stable or decreasing in each example. The exception may have been due to the very small number of cases available, or may indicate that PLT is actually increasing for a segment of the total PLT population. A follow-on study using Fiscal Year 1986 data could resolve this question.

6. Commercial PLT Comparison

a. It was expected that commercial lead time indicators would fluctuate over time in a cyclical manner and that DLA PLT would reflect this fluctuation to some degree. Figures 13 and 14 show that this was not the case. In PLT of items for which a close match was obtained between DLA items and commercial items, the "Economic Cycle" was not apparent. (As discussed in the Data Source Section, paragraph II.B.3, the

commercial lead times were telephone quotes for PLT obtained from contractors by Purchasing magazine.) PLT fluctuated independently of the commercial lead time indicators. Figure 15 compares combined averages of PLT for each center and underscores the significantly longer period of time for which DLA must wait for shipment of material.

b. Possible reasons for these differences include:

(1) Production quantities for DLA contracts may be larger, in some cases, than commercial production quantities.

(2) Some DLA materials may have more stringent technical specifications than their commercial counterparts.

(3) Some DLA materials may have to undergo test and evaluation procedures prior to shipment.

(4) The CDD based on the SAMMS computed PLT may be too generous. That is, the contractor may be able to ship a completed production run in less time than the CDD, but places a higher priority on commercial orders and waits until the CDD to ship.

(5) Contractors may place higher priorities on meeting their obligations to commercial customers.

Figure 13. PLT: COMMERCIAL VERSUS DGSC

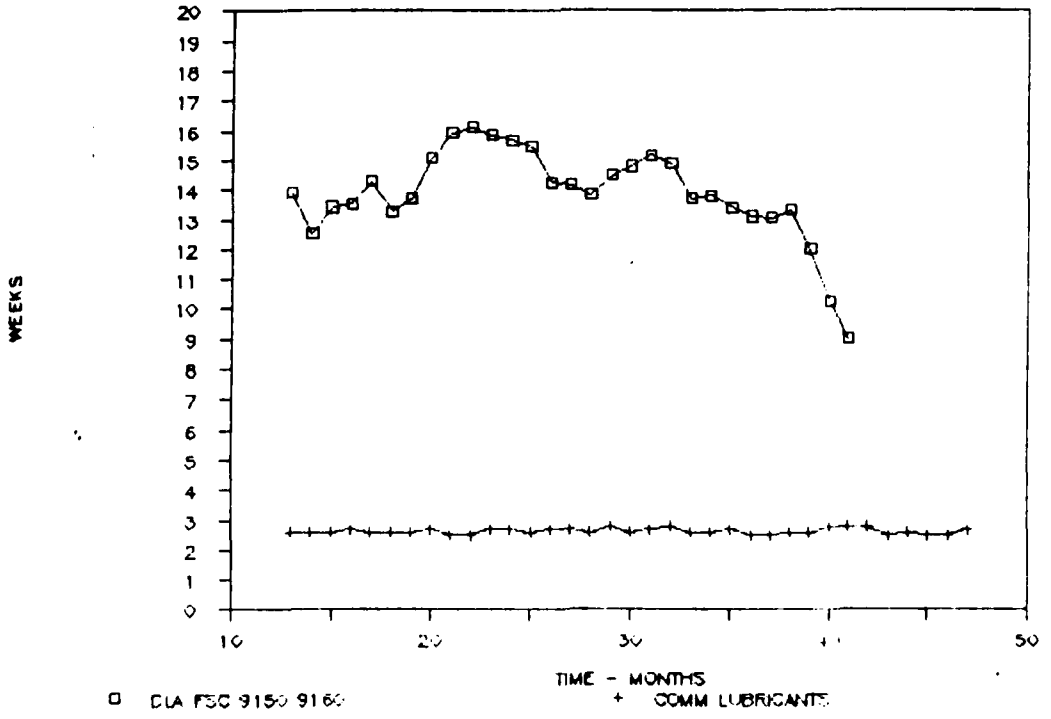


Figure 14. PLT: COMMERCIAL VERSUS DISC

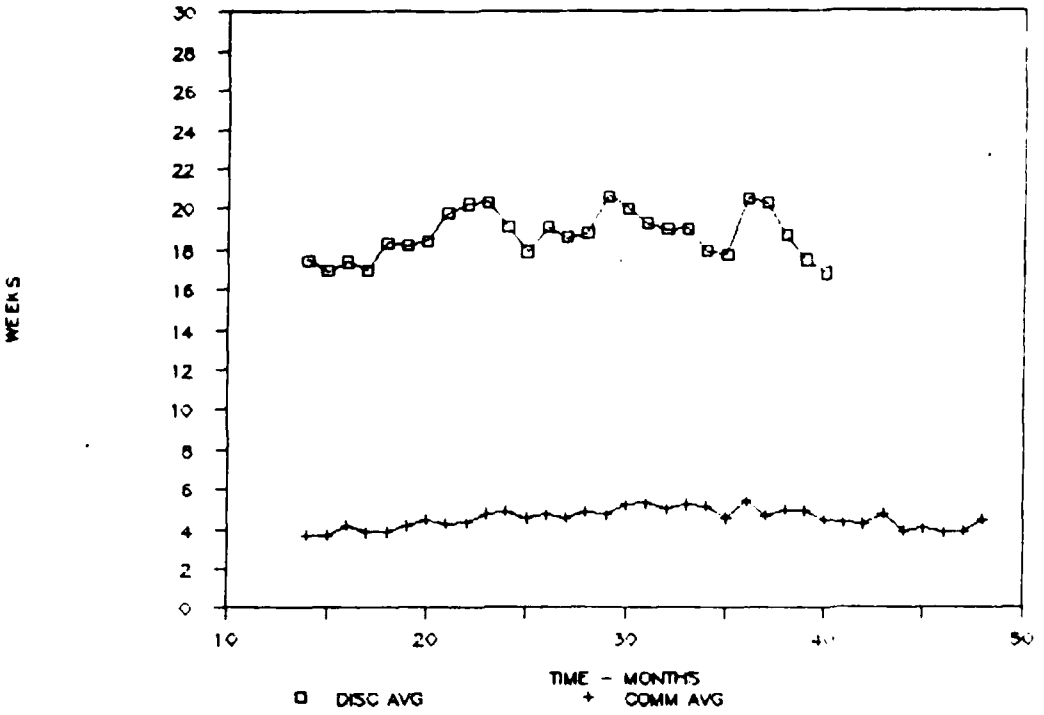
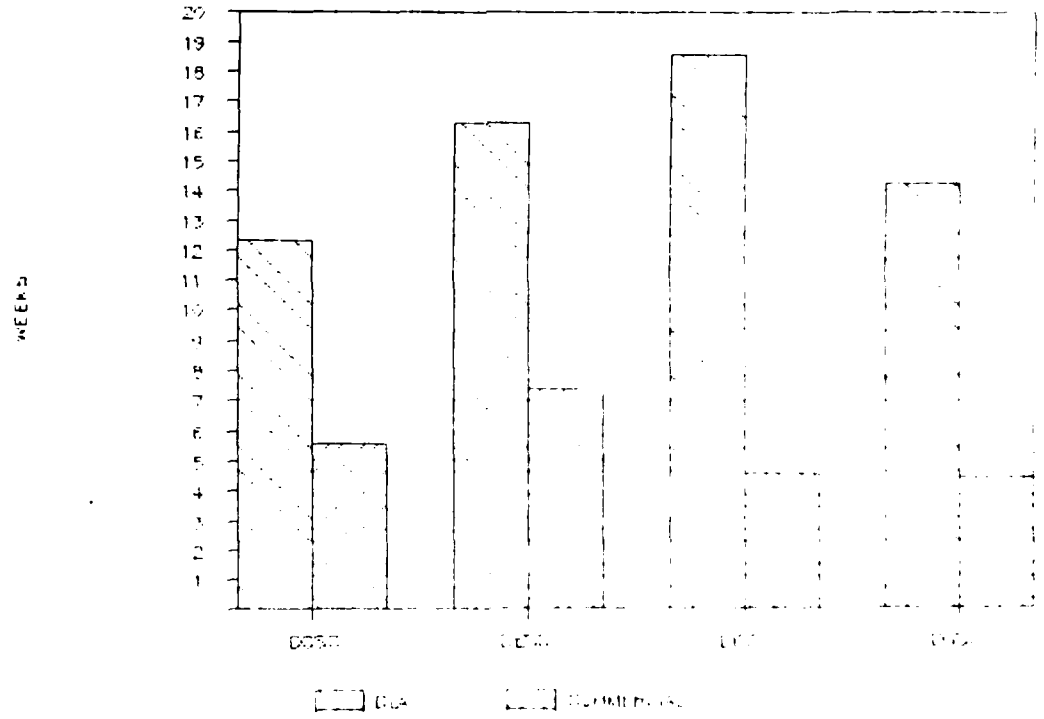


Figure 15. PLT: COMMERCIAL VERSUS DLA



IV. CONCLUSIONS

o Administrative lead times have been increasing as a result of a number of factors, some of which were recent contracting initiatives.

o Production lead times have not been adversely affected by the contracting initiatives and appear to be experiencing recent declines.

o DLA's competitively awarded hardware items have had shorter ALTs and PLTs than sole-source awarded items. Hardware items that have been broken out to competition have reduced leadtimes. The benefit of competition appears to be greater for PLT than ALT.

o Direct vendor deliveries experience significantly shorter PLTs than Stock Buys.

o PLTs for DLA's hardware items are significantly longer than the PLTs for comparable items in the private sector.

o It may be possible to reduce PLT by reducing the SAMMS generated Contract Delivery Date based on the experience of the Contracting Officer or by some other means.

o The development of new SAMMS data elements are required to identify 1) the sole source small purchase contracts and 2) the breakout of a sole source item to the original equipment manufacturer.

V. RECOMMENDATIONS

o Efforts to establish alternate sources (break-out items from sole source to competition) should be continued to reduce lead times.

o Specific components of Administrative Lead Times should be examined in detail to determine the causative factors responsible for ALT increases.

o An investigation should be conducted into the validity of the PLT generated by SAMMS which is used to establish the Contract Delivery Date.

o A follow-on lead time study should be conducted using fiscal year 1986 data.

o SAMMS data elements should be established which would permit the examination of lead times for break-outs to original equipment manufacturers and the identification of small purchase sole source contracts.

APPENDIX A

Contracting Initiatives

I. Public Laws

A. Competition in Contracting Act (CICA) PL 98-369

B. Small Business and Federal Procurement Competition Enhancement Act (SBFPEA) PL 98-577

C. Defense Procurement Reform Act PL 98-525 (DPRA)

II. DLA Policy Changes

A. Improve Pricing and Competition (IMPAC) Program which includes:

1. New Sources Development
2. Competition Hit List
3. Value Engineering
4. Spares Breakout
5. Economic Ordering/Volume Shipments
6. Intrinsic Value Analysis
7. Overpricing Refunds
8. Outreach
9. Awards
10. Contractor Purchasing System Review

B. Small and Disadvantaged Business Program

APPENDIX B

SAMMS Active Contract File and Contract History File Record Layouts

SECTION 5 PROCUREMENT FILE SUMMARIES AND RECORD LAYOUTS

5.1 USPMACF - ACTIVE CONTRACT FILE

FILE SUMMARY

FILE NAME:	Active Contract File
FILE INDEX NUMBER:	USPMACF
PURPOSE:	From the time a contract is awarded to the time it is closed a record of all pertinent data for each contract line item on the contract is maintained in the Active Contract File. During the life of the contract any action affecting the contract line item data causes the record to be updated to reflect the change. The Contract Line Item Records may be interrogated internally or externally whenever information about the line item is required. When the entire contract is closed it is reported on monthend summary reports and dropped from the file.
RECORD SIZE:	400 Bytes - Fixed Length
BLOCK SIZE:	3200 Bytes or 4000 Bytes (Depending on Individual Center Requirements)
ACCESS METHOD:	Index Sequential
SEQUENCE:	Contract - Contract Line Item Number
SUPPLEMENTAL DESCRIPTION:	N/A

FILE RECORD LAYOUT

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
RECORD ID	1 AN	1
CONTRACT RECORD KEY	23 AN	2-24
MOD NUMBER	4 AN	25-28
PURCHASE REQUEST NUMBER	14 AN	29-42
PR ITEM NUMBER	6 AN	43-48

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
CONTRACT STOCK QUANTITY	5 P	49-53
UNIT OF ISSUE	2 AN	54-55
STANDARD UNIT PRICE	5 P	56-60
FUND CLASS CODE	3 AN	61-63
STOCK NUMBER	15 AN	64-78
S/P CODE	1 AN	79
OUTPUT ROUTING CODE	2 AN	80-81
OWNR/PURP	1 AN	82
CONDITION	1 AN	83
TYPE PACK	1 AN	84
WEAPON SYS	1 AN	85
SRCE OF PCMT	1 AN	86
SUPPLY STAT	1 AN	87
BACKORDER	1 AN	88
REQUESTED OR PRIORITY DELIVERY DATE	3 P	89-91
PROJECT CODE	3 AN	92-94
SEA IND	1 AN	95
UNIT WEIGHT	4 P	96-99
CUB PER UWT	5 P	100-104
REQUISITION NUMBER	15 AN	105-119
E/W IND	1 AN	(105)
LOCATION	3 AN	(106-108)
GFM	1 AN	(109)
REP BUY	1 AN	(110)
OUT OF STOCK DATE	3 P	(111-113)
SPECIAL ANNOTATION	2 AN	(114-115)
RQMT	4 AN	(116-119)

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
SUPPL ADDRESS	6 AN	120-125
PLT	2 P	(120-121)
TLR WEAP SYS	3 AN	(122-124)
SIGNAL	1 AN	126
REQN FUND CODE	2 AN	127-128
DIST CODE	3 AN	129-131
DIRECT DELIVERY DIC	3 AN	132-134
REQN PRIORITY	2 AN	135-136
ADVCE & STATUS	2 AN	137-138
SPEC PROJ	1 AN	139
BILLING ACTIVITY ADDRESS	6 AN	140-145
EXCEPT IND	1 AN	146
(Blank Field)	22 AN	(125-146)
METH PROC	1 AN	147
N/METH PROC	1 AN	148
DATA COMPLETION	3 P	149-151
MONEY (FUNDS) PRIORITY	2 AN	152-153
PROC DOC CD	1 AN	154
STUDY GEN OR RB APPROV DATE	3 P	155-157
VEP	1 AN	158
BRANCH	2 AN	159-160
BUYER	3 AN	161-163
SOLICITATION DATE	3 P	164-166
PR RETURN DATE	3 P	167-169
PR RETURNED TO	4 AN	170-173

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
RETURN REASON	2 AN	174-175
PR REINSTATE DATE	3 P	176-178
CANCELLATION DATE	3 P	179-181
CANCEL REASON	2 AN	182-183
NUMBER OF RETURN DAYS	2 P	184-185
CONTRACT DELIVERY DATE	3 P	186-188
AWARD DATE	3 P	189-191
FSCM	5 AN	192-196
STATE OR COUNTRY	2 AN	197-198
REPORT CODE	4 AN	199-202
GSA CODE	1 AN	203
(Blank Field)	1 AN	204
NEG AUTH	1 AN	205
PCC CODE	1 AN	206
VALUE/ENG CL	1 AN	207
FAST PAY	1 AN	208
ADMIN LOCATION	3 AN	209-211
OPTION PROVISIONING DATE	3 P	212-214
CONTRACT UNIT PRICE	7 P	215-221
QTY VAR	3 AN	222-224
FOB	1 AN	225
OTHER COST	1 AN	226
TYPE OF AWARD	1 AN	227

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
OBLIGATION DATE	3 P	228-230
REASON FOR DELAY	2 AN	231-232
DELIVERY EXTENDED DATE	3 P	233-235
CONSIDERATION	1 AN	236
QUANTITY SHIPPED	5 P	237-241
SHIP DATE	3 P	242-244
MODE	1 AN	245
FOLLOWUP DATE	3 P	246-248
RECEIPT QUANTITY	5 P	249-253
CONDITION L RECEIPT QUANTITY	5 P	254-258
OBLIGATION DOLLAR VALUE	7 P	259-265
SYSTEM CODES	6 AN	266-271
U/I CHG	1 AN	(266)
VALUE CD	1 AN	(267)
E-W-IND	1 AN	(268)
DUE-IN CD	1 AN	(269)
LOC IND	1 AN	(270)
PR VALUE	1 AN	(271)
RECEIPT DATE	3 P	272-274
CRITICAL DESIG CODE	1 AN	275
EXPENDITURE DATE	3 P	276-278
ZST IND	1 AN	279
TYPE PAYMENT	1 AN	280
FIC	1 AN	281
EXPENDED QUANTITY	5 P	282-286
EXPENDED DOLLAR VALUE	7 P	287-293

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
OBLIGATION ADJUSTMENT DOLLAR VALUE	7 P	294-300
PURCHASE-UI	2 AN	301-302
UI-CONVERSION FACTOR	5 P	303-307
PROGRESS OR ADVANCE DOLLAR VALUE	7 P	308-314
P/A FIC	1 AN	315
SRPC	1 AN	316
LOW VAL	3 P	317-319
DLVY-DT-OLD ZEROS	2 P 5 P	320-321 (319-321)
DISCOUNT TERMS	4 AN	322-325
MOWASP-IND	1 AN	326
ADD/DIVERT IND	1 AN	327
WARRANTY CD	1 AN	328
DISBURSING OFFICER VOUCHER NUMBER	8 AN	329-336
PAYMENT OFFICE	2 AN	337-338
DATE CLOSED	3 P	339-341
SALES INFO CD	1 AN	342
BILLED QUANTITY	5 P	343-347
FINANCIAL GAIN/LOSS QUANTITY	5 P	348-352
REMIT TO CODE	5 AN	353-357
MANUFACTURERS DIRECTIVE NUMBER	3 AN	358-360
PROCUREMENT GROUP CODE	3 P	361-363
GFM UNIT PRICE	5 P	364-368
GFM REQD CODE	1 AN	369

5.1 USPMACF - ACTIVE CONTRACT FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
BAILMENT CODE	1 AN	370
TLR CODE	2 AN	371-372
CANCELLATION SOURCE CODE (OR SPACES)	3 AN	373-375
REC BUY APPROVAL DATE	5 AN	376-380
SIS REISSUE DATE	3 P	381-383
(Blank Field)	7 AN	384-390
SUMMARY INCRE	1 AN	391
DPSC CONV CD	1 AN	392
COPAD IND	1 AN	393
FMS DEMAND	1 AN	394
PORT OF EMBARKATION CODE	3 AN	395-397
ASUR-DLVY-PRC	1 AN	398
TERMN-CD	1 AN	399
COMPLETED CONT	1 AN	400

5.19 USPTCHF - CONTRACT HISTORY FILE

FILE SUMMARY

FILE NAME:	Contract History File
FILE INDEX NUMBER:	USPTCHF
PURPOSE:	To provide a readily accessible History File of contracts awarded to different manufacturers. The file reflects Award Dates, Stock Numbers, Line Item Values and Total Contract Values.
RECORD SIZE:	110 Bytes - Fixed Length
BLOCK SIZE:	7700 Bytes
ACCESS METHOD:	Sequential
SEQUENCE:	Contract Number
SUPPLEMENTAL DESCRIPTION:	N/A

FILE RECORD LAYOUT

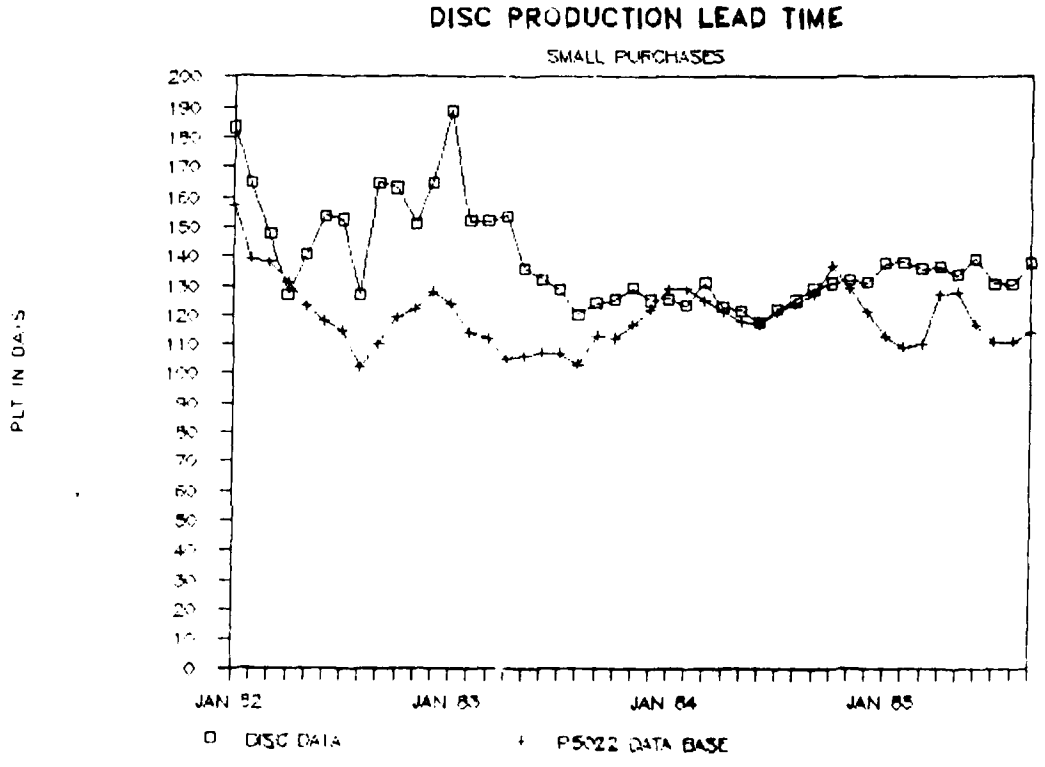
DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
CONTRACT NUMBER	17 AN	1-17
MOD IND	2 AN	18-19
CONTRACT LINE ITEM NUMBER	6 AN	20-25
DEL DATE	3 P	26-28
FSCM	5 AN	29-33
AWARD DATE	3 P	34-36
STOCK NUMBER	15 AN	37-51
REPORT CODE	4 AN	52-55
TLR CODE	2 AN	56-57
STATE OR COUNTRY	2 AN	58-59
AUTH CD	1 AN	60
VF CODE	1 AN	61

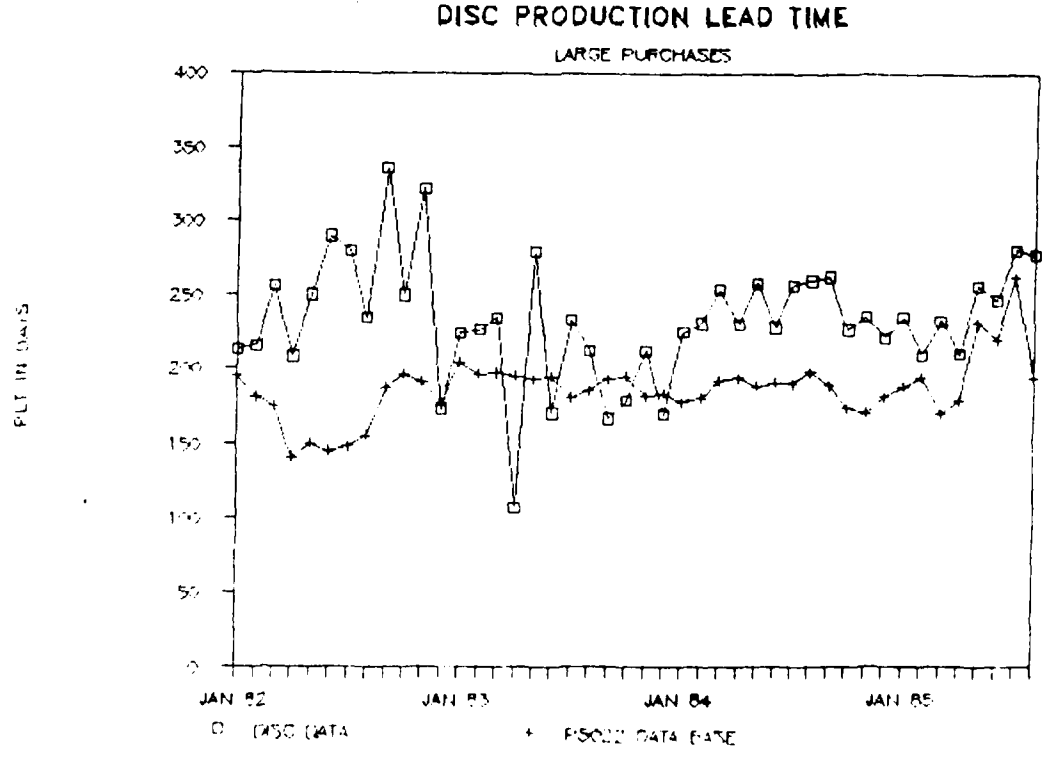
5.19 USPTCHF - CONTRACT HISTORY FILE (CONT'D)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
QUANTITY	5 P	62-66
SHIP DATE	3 P	67-69
DATE CLOSED	3 P	70-72
CONTRACT LINE ITEM VALUE	7 P	73-79
CONTRACT TOTAL VALUE	8 P	80-87
CLIN UNIT PRICE	7 P	88-94
GFM UNIT COST	5 P	95-99
MFG	1 AN	100
DIRECTIVE NUMBER	2 AN	101-102
WARRANTY CODE	1 AN	103
TERMN CODE	1 AN	104
CONSB ITM TRFR IND	1 AN	105
PRICE COMPETITION CODE	1 AN	106
STOCK/PART NO CODE	1 AN	107
LOCATION CODE	3 AN	108-110

APPENDIX C

DISC Production Lead Time Validation of Study Measures





APPENDIX D

DCSC Study Variables Affecting Manhours to Award Contract

1. PAC Trainees
2. COPAD
3. Formal Training
4. Six Month Buy Program
5. Annual Buy Program
6. Competition in Contracting Act (CICA)
7. Price Reasonableness
8. Personnel Reassignments
9. Attrition Rate
10. Standard Organization
11. Key Personnel Losses
12. New Items
13. Prescreening of A02/A05 Requisitions
14. Turnaround Time on Return Flow PRs
15. DAR-FAR Conversion
16. Hiring Lag
17. Never-Out-of-Stock Program
18. Seasonality
19. Automated Phase II Changes
20. Competion and Pricing Office (CAPO)
21. Curtailment of Flexitime

APPENDIX E

Fund Classification and Supply Status Codes

Fund Classification Codes

Code	Definition
AA	Stock Replenishment - VIP
AB	Stock Replenishment - Non-VIP High
AC	Stock Replenishment - Non-VIP Medium
AD	Stock Replenishment - Non-VIP Low
BA	Direct Shipment - Stocked Items - VIP
BB	Direct Shipment - Stocked Items - Non-VIP High
BC	Direct Shipment - Stocked Items - Non-VIP Medium
BD	Direct Shipment - Stocked Items - Non-VIP Low
EZ	Direct Shipment - Nonstocked Items (SSCs 3 and 9) Items supplied by DPSC Factory

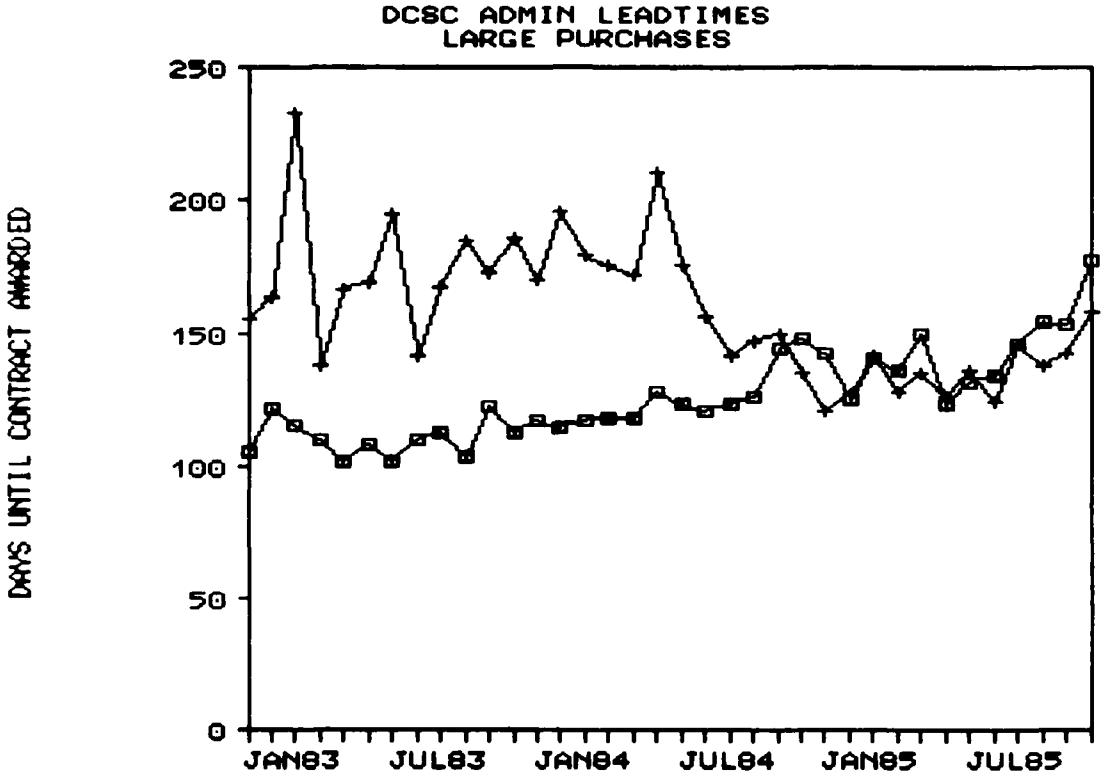
---

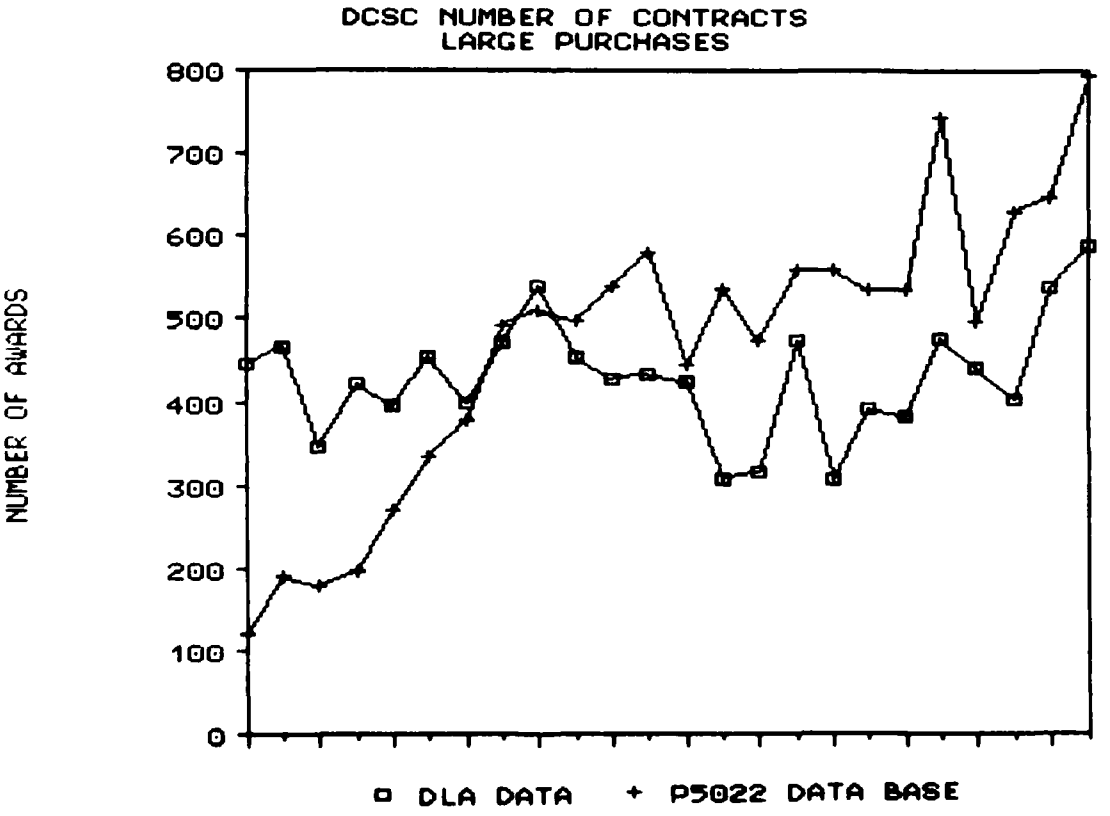
Supply Status Codes

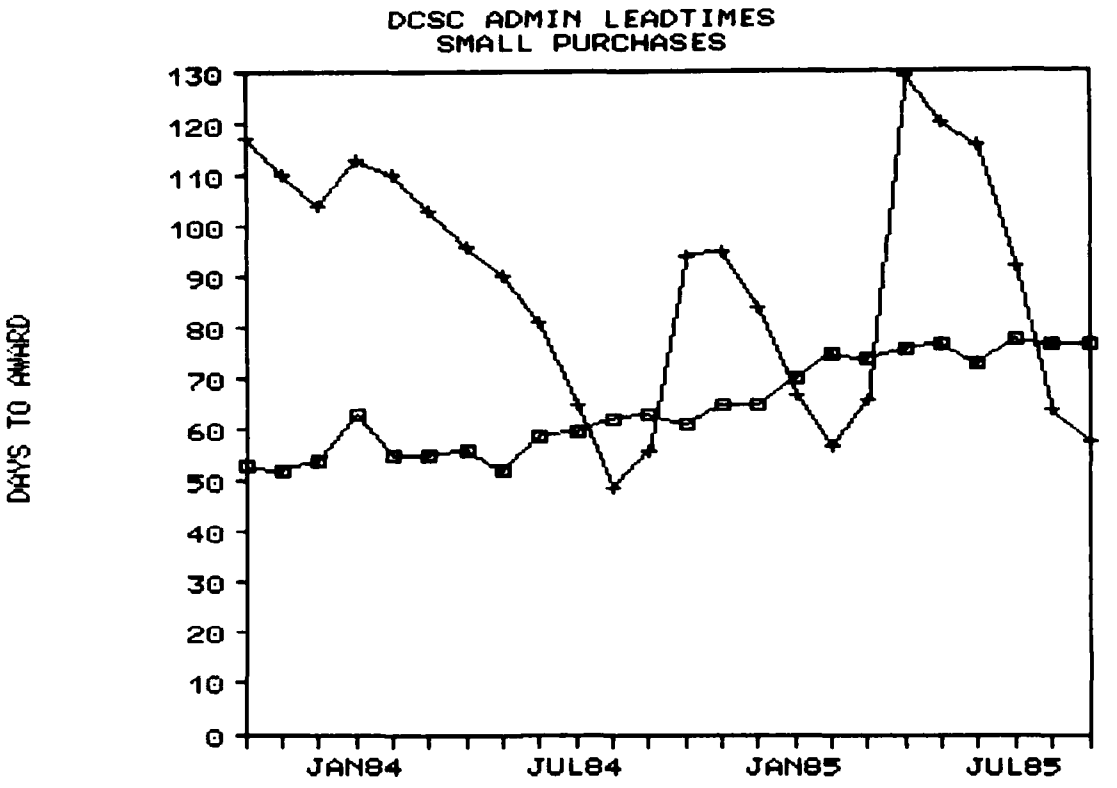
Code	Term	Explanation
1	Stocked	Centrally purchased, stocked, and distributed
2	Nonstocked	Main means of supply is local purchase
3	Nonstocked	Centrally purchased for shipment directly to user or another military service; not stocked by purchasing activity

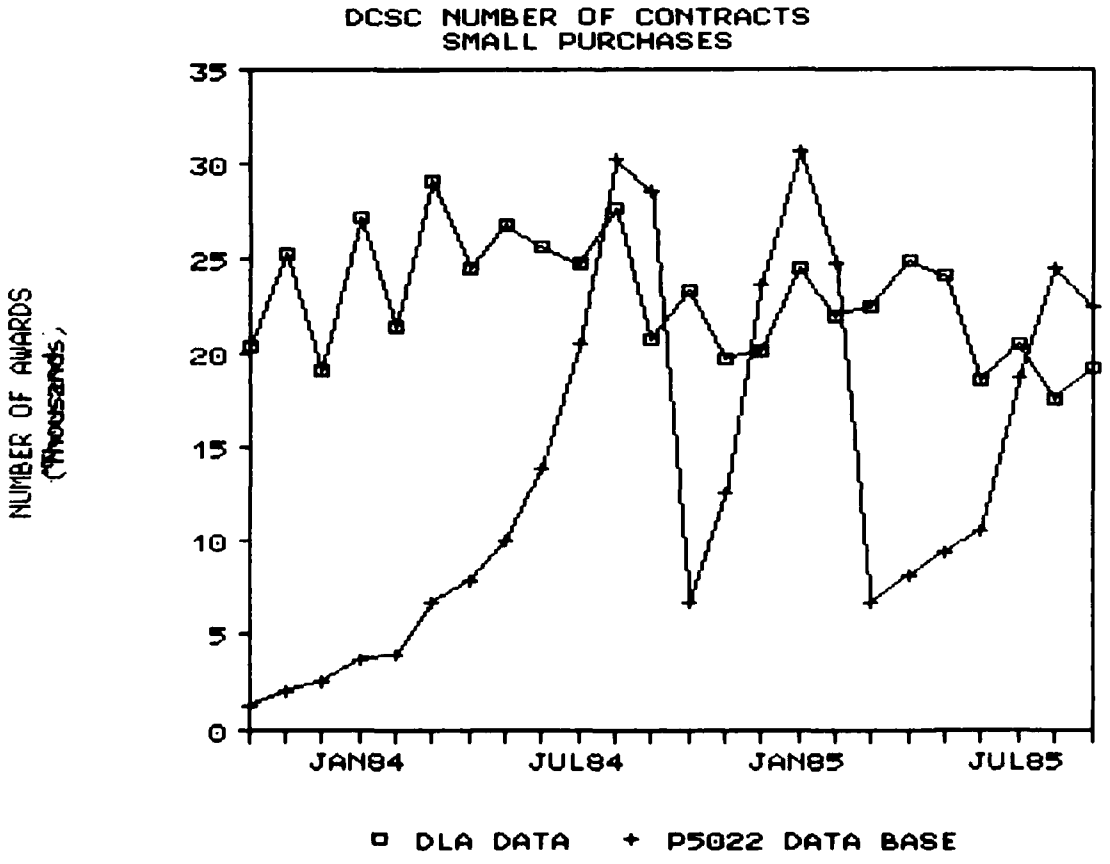
APPENDIX F

Validation of Study Measures Using Data From DLA Contracting Directorate






DCSC ADMIN LEADTIMES
SMALL PURCHASES
DAYS TO AWARD
130
120
110
100
90
80
70
60
50
40
30
20
10
0
JAN84
JUL84
JAN85
JUL85


DCSC NUMBER OF CONTRACTS
SMALL PURCHASES
NUMBER OF AWARDS
(Thousands)
35
30
25
20
15
10
5
0
JAN84
JUL84
JAN85
JUL85
DLA DATA
P5022 DATA BASE

APPENDIX G

Administrative and Production Lead Time by Price Competion Code for Each Center

LEAD TIMES STRATIFIED BY PRICING COMPETITION CODE

DGSC

PCC	MEAN ALT	STANDARD DEV	N OF CASES
-	79.8	63.1	16696
1	72.1	57.6	98823
3	122.4	70.7	2196
4	56.1	68.6	64929
5	148.5	73.6	2684
6	146.7	78.4	2463
7	164.9	92.5	730
8	189.8	98.7	879

PCC	MEAN PLT	STANDARD DEV	N OF CASES
-	64.6	93.0	6588
0	102.2	105.1	541924
1	65.5	67.1	28624
3	133.6	129.4	632
4	57.9	80.5	25883
5	164.9	134.9	821
6	201.0	153.6	846
7	131.1	95.2	237
8	167.6	148.2	186

LEAD TIMES STRATIFIED BY PRICING COMPETITION CODE

DESC

PCC	MEAN ALT	STANDARD DEV	N OF CASES
-	113.1	98.9	6663
1	77.5	64.6	201452
3	180.9	103.9	494
4	77.4	82.3	88994
5	203.4	102.4	2095
6	202.4	109.5	3279
7	269.0	131.9	317
8	266.4	150.0	530

PCC	MEAN PLT	STANDARD DEV	N OF CASES
-	144.0	150.5	2308
0	123.9	105.9	667271
1	94.4	70.7	75988
3	172.6	148.6	166
4	95.9	89.8	33365
5	168.9	139.2	683
6	209.5	177.4	1048
7	109.6	98.1	103
8	89.4	88.8	217

LEAD TIMES STRATIFIED BY PRICING COMPETITION CODE

DCSC

PCC	MEAN ALT	STANDARD DEV	N OF CASES
-	120.3	84.3	11404
1	62.6	71.6	230558
2	112.0	0.0	1
3	119.2	80.2	3723
4	94.6	82.6	103659
5	134.7	100.2	5391
6	155.8	98.9	6018
7	230.5	127.9	639
8	264.6	130.3	545

PCC	MEAN PLT	STANDARD DEV	N OF CASES
-	110.2	119.9	4458
0	67.5	82.8	1206044
1	46.6	61.5	116345
2	39.0	0.0	1
3	112.9	96.1	1389
4	86.5	100.9	41854
5	114.3	106.9	2606
6	192.7	136.1	2872
7	162.9	96.2	251
8	204.5	137.9	215

LEAD TIMES STRATIFIED BY PRICING COMPETITION CODE

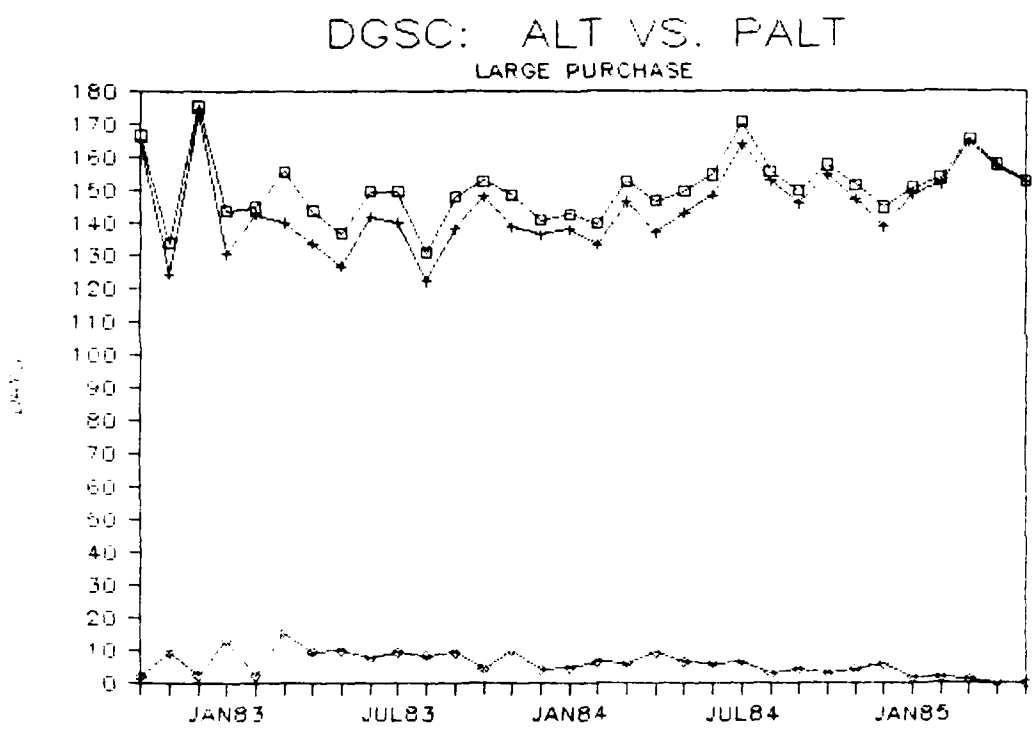
DISC

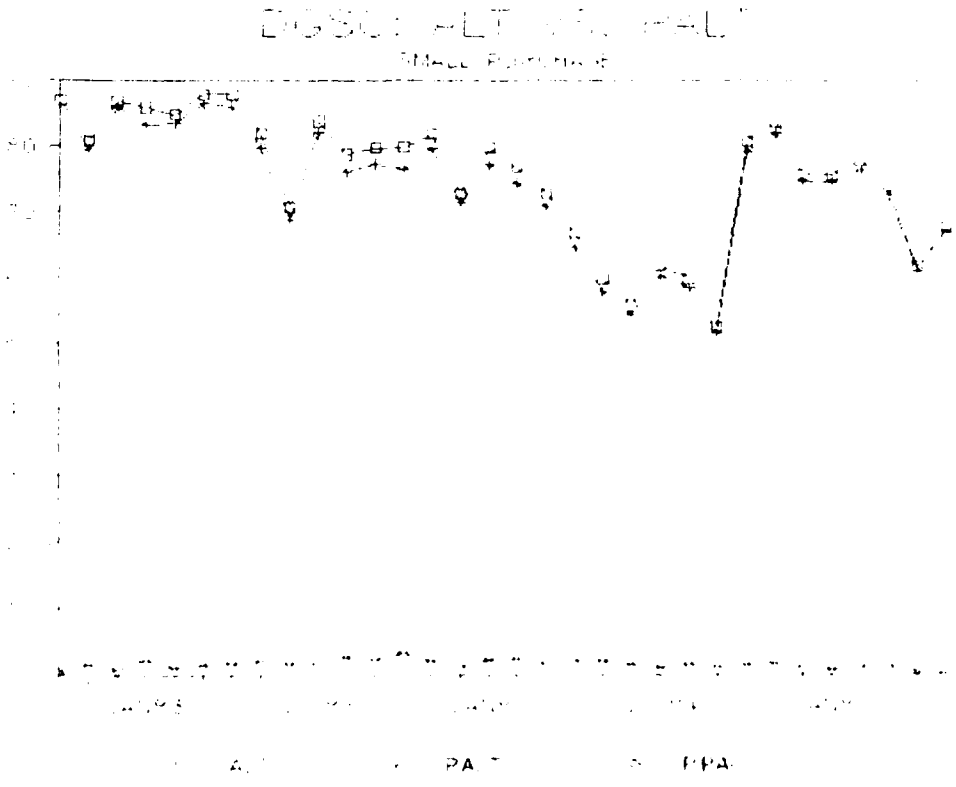
PCC	MEAN ALT	STANDARD DEV	N OF CASES
-	150.4	94.2	11138
1	111.7	81.6	212743
2	100.0	0.0	1
3	170.8	106.1	858
4	123.9	100.7	82757
5	221.5	124.6	1614
6	231.9	136.8	1430
7	260.1	157.8	383
8	351.3	182.6	256

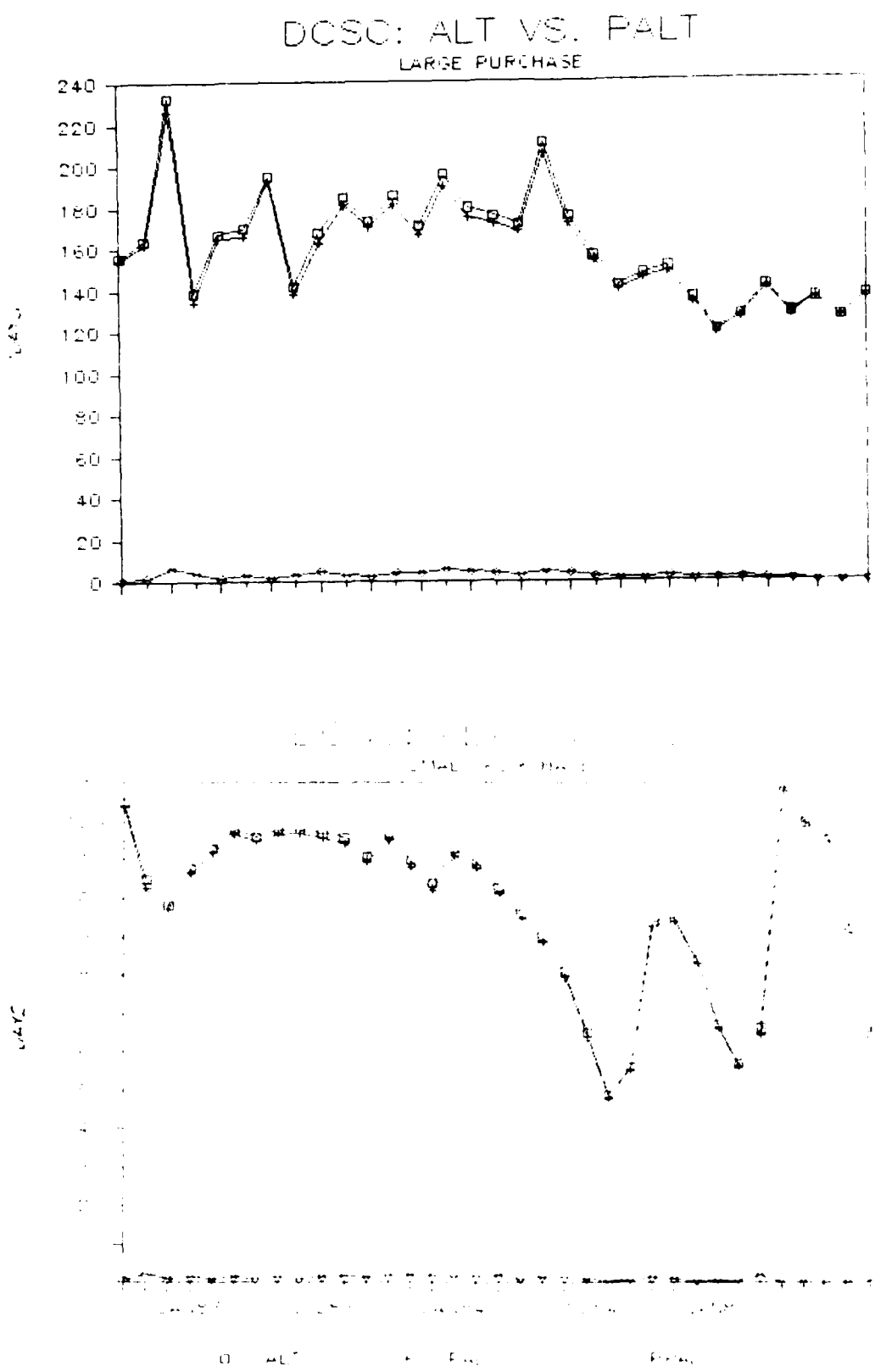
PCC	MEAN PLT	STANDARD DEV	N OF CASES
-	148.6	147.6	3294
0	122.9	105.8	724500
1	99.3	75.8	70527
3	169.7	156.1	311
4	123.3	126.8	26702
5	186.2	137.6	535
6	255.2	126.2	610
7	152.0	150.1	114
8	156.8	132.6	81

APPENDIX H

Suspense Time Compared to Administrative Lead Time

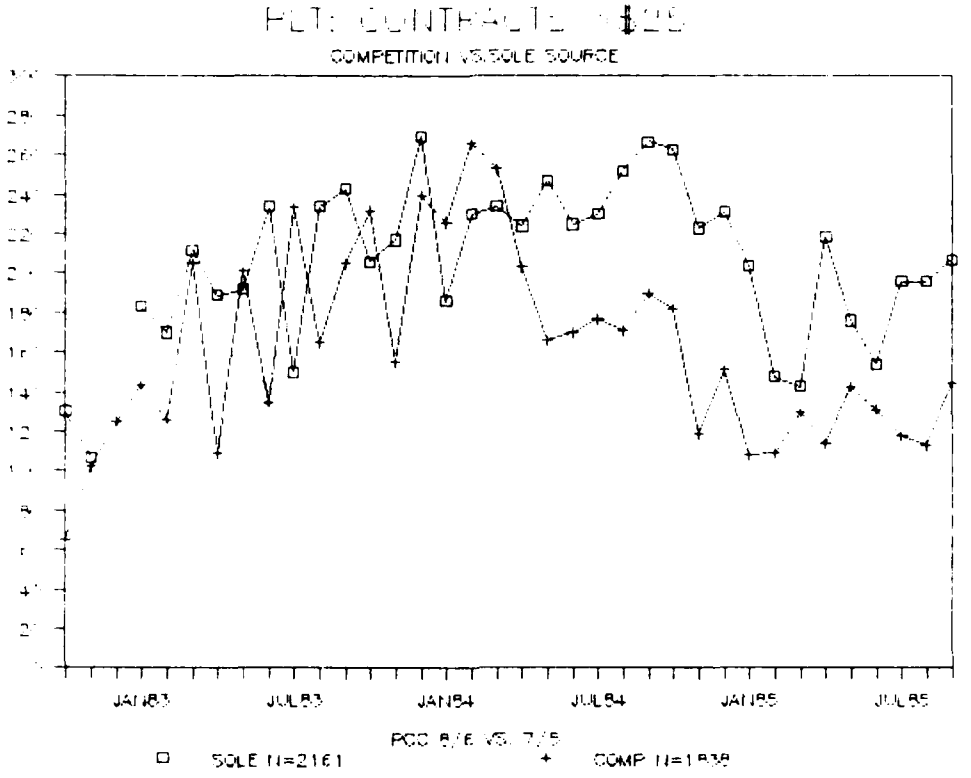





DCSC: ALT VS. PALT
LARGE PURCHASE
240
220
200
180
160
140
120
100
80
60
40
20
0

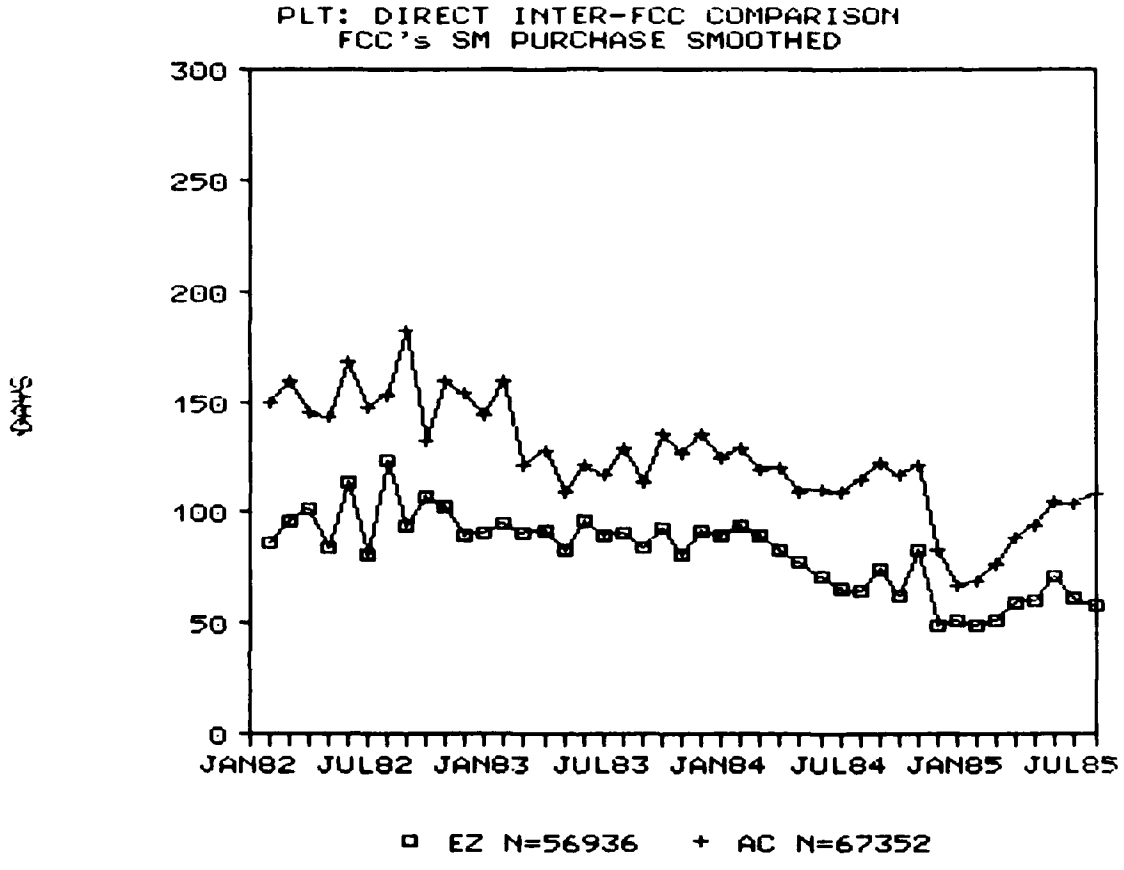
APPENDIX I

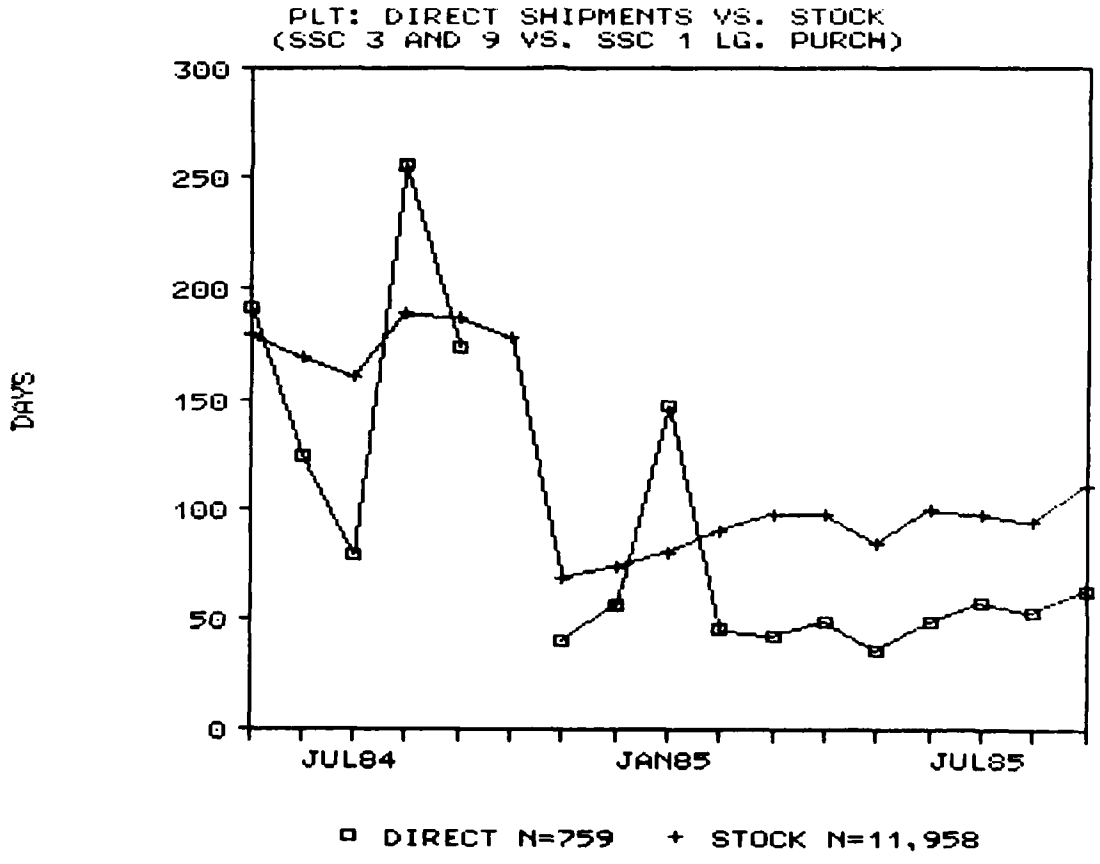
Production Lead Time Comparing Sole Source Awards to Competitive Awards

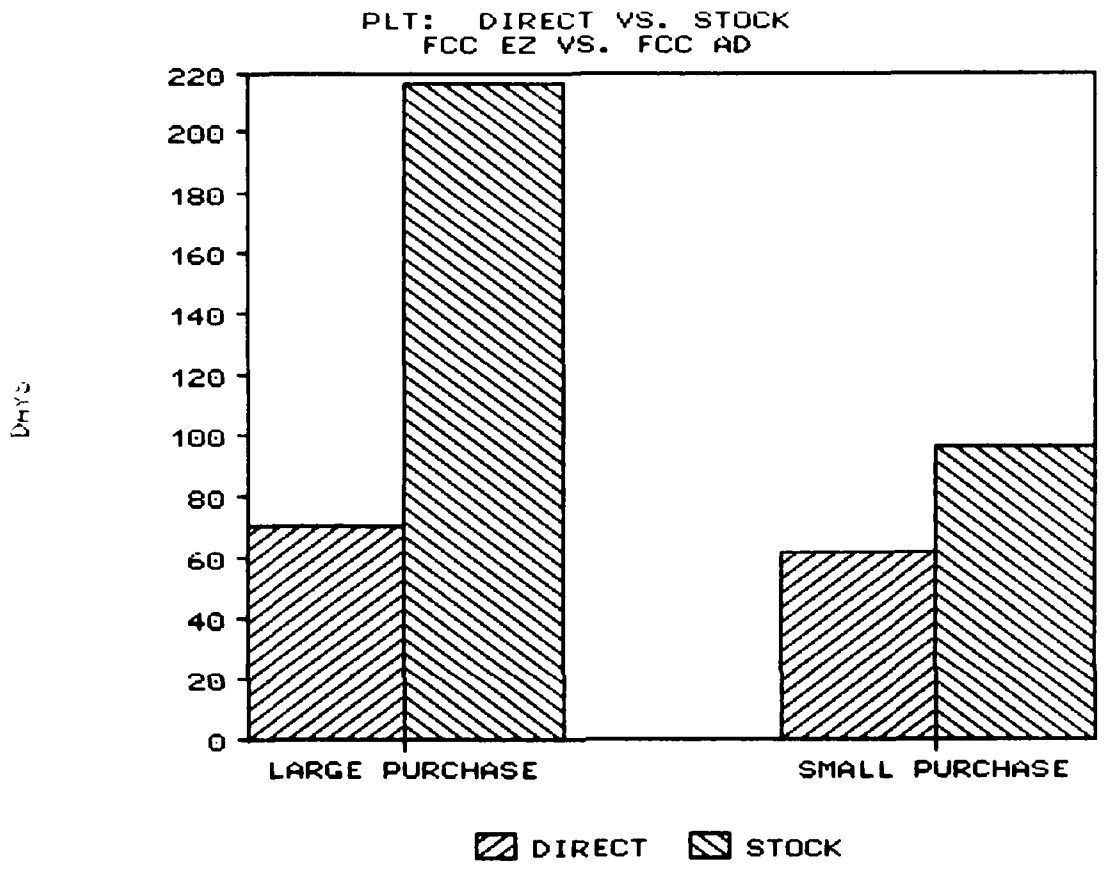


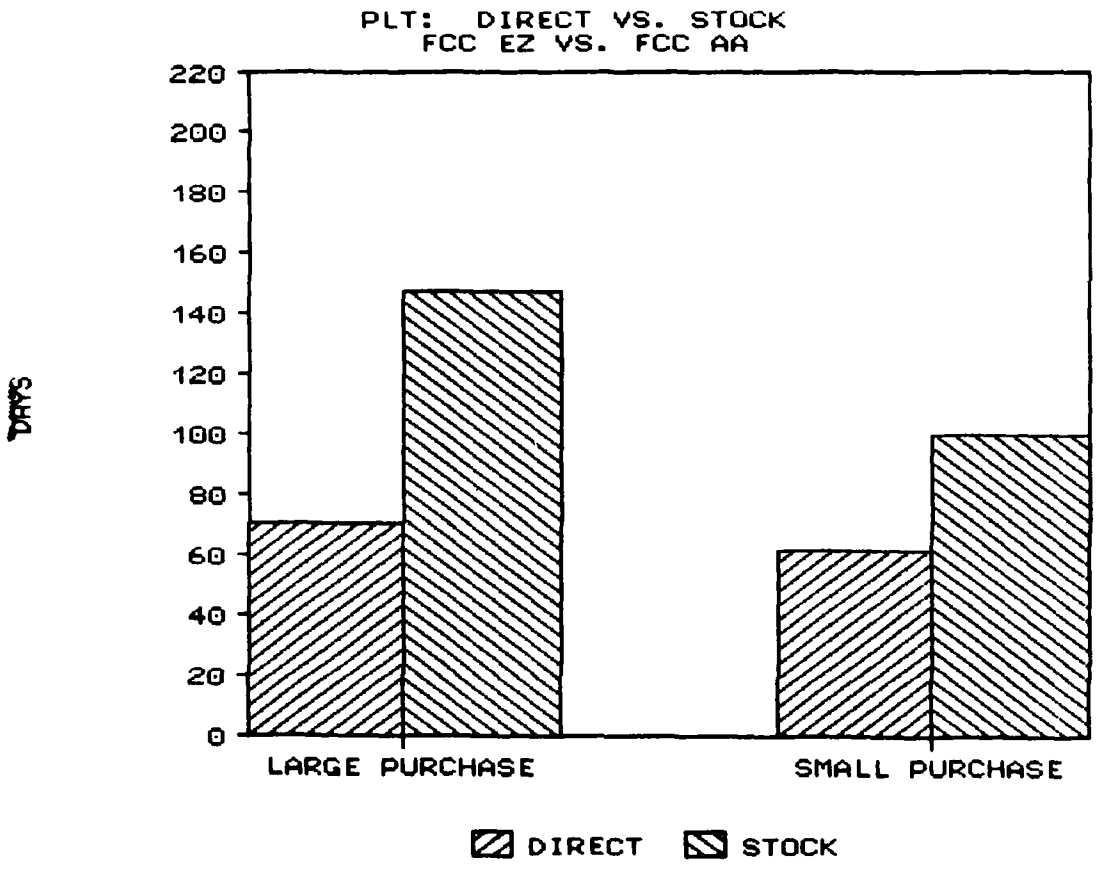
APPENDIX J

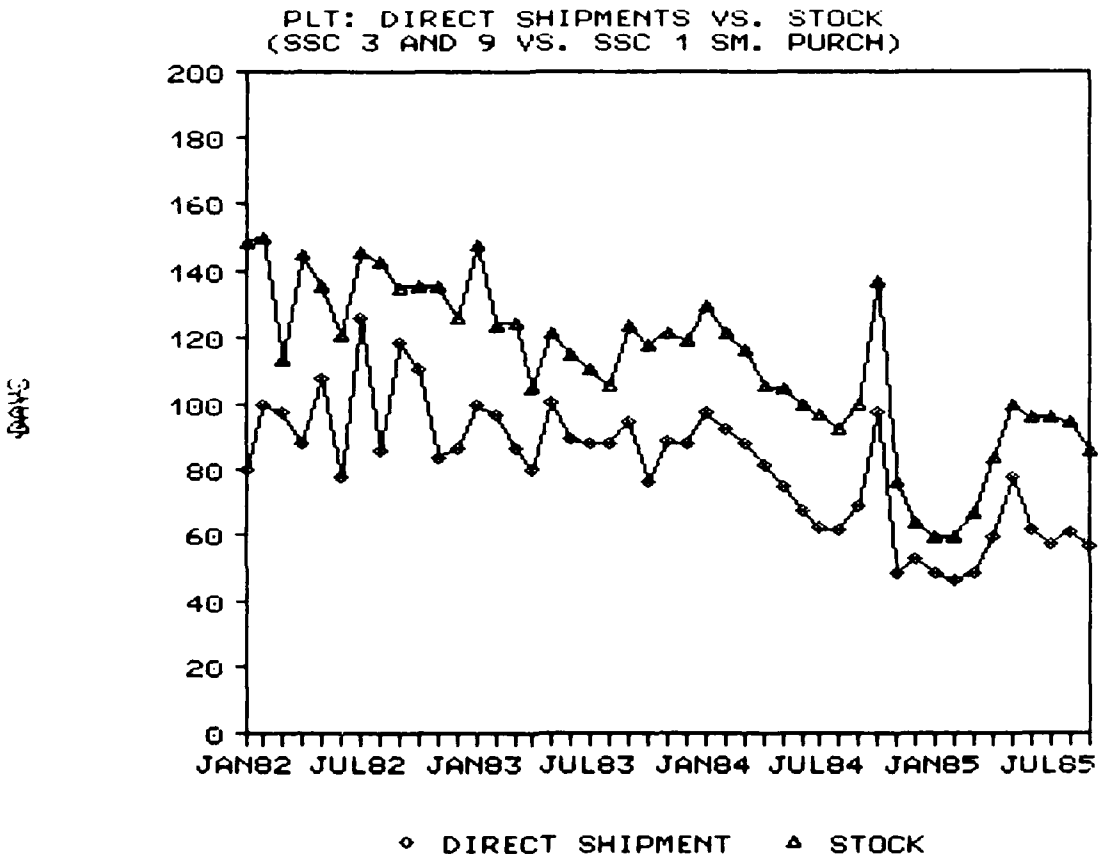
Production Lead Time for Stock Buys Compared to Direct Vendor Deliveries




PLT: DIRECT SHIPMENTS VS. STOCK
(SSC 3 AND 9 VS. SSC 1 LG. PURCH)
DAYS
300
250
200
150
100
50
0
JUL84
JAN85
JUL85
DIRECT N=759
STOCK N=11,958


PLT: DIRECT VS. STOCK
FCC EZ VS. FCC AD
DAYS
220
200
180
160
140
120
100
80
60
40
20
0
LARGE PURCHASE
SMALL PURCHASE
DIRECT
STOCK


PLT: DIRECT VS. STOCK
FCC EZ VS. FCC AA
DAYS
220
200
180
160
140
120
100
80
60
40
20
0
LARGE PURCHASE
SMALL PURCHASE
DIRECT
STOCK


PLT: DIRECT SHIPMENTS VS. STOCK
(SSC 3 AND 9 VS. SSC 1 SM. PURCH)
DAYS
200
180
160
140
120
100
80
60
40
20
0
JAN82 JUL82 JAN83 JUL83 JAN84 JUL84 JAN85 JUL85
DIRECT SHIPMENT
STOCK

FMD

5—87

DTIC